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Bulletin

PRAISE FROM BELGIUM

The celebrated Belgian surgeon, Doctor DePage, in a recent issue of the *Journal of the Belgian Surgical Society*, states that the medical schools of America are destined soon to take the foremost place among the medical institutions of the world. He urges his compatriots to profit by the numerous striking object lessons America offers. Such establishments as that of the Mayo brothers, he says, is only possible to a country capable of large and courageous initiative. Doctor DePage adds his sincere and feeling tribute to the many foreign encomiums bestowed on that Philadelphia cornerstone of surgical research, Keen' "Surgery." —*Public Ledger.*

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OPERATION AND REOPERATION FOR GALLSTONE DISEASE *

JOHN B. DEAVER, M.D.

WITH A REPORT ON PATHOLOGIC RESEARCH BY

STANLEY P. REIMANN, M.D.

Director of Pathologic Laboratory, Lankenau Hospital

PHILADELPHIA

The question of recurrence of symptoms after surgical treatment of affections of the gallbladder and the biliary passages is one that has been much discussed during the past decade, and one which I believe will bear further consideration.

In 1916, reporting on more than a thousand operations on the gallbladder and the biliary passages in my service at the Lankenau (formerly the German) Hospital of Philadelphia, I found that 4.07 per cent. were reoperative cases (some of the patients having had three operations). Among 800 cases coming under my care in the same hospital since January, 1916, it appears that 8.5 per cent. (seventy cases) were secondary (there were also a few tertiary) operations. Confronted with this increase in recurrence, we naturally turn to seek the cause.

Of the recent series, fifty-one patients were originally operated on elsewhere by other surgeons, the remaining nineteen having been operated on by me at the Lankenau Hospital.

In thirty-six of the fifty-one, recurrence took place after a cholecystostomy and fifteen after a cholecystectomy. The longest interval between operations was fifteen years. This patient (reported in a previous communication), in fact, had been operated on twice before coming under my care. The first operation—cholecystostomy—for the relief of gallstones had been done seventeen years previously, followed two years later by a choledochoduodenostomy and repair of an incisional hernia. At the third operation numerous adhesions were found about the anastomosis, the dilated common duct contained numerous stones as well as foul smelling grumous material, and the ampulla of Vater was constricted.

The information regarding the condition found at the primary operation is not complete for all the cases of this group. Among those for which data are at hand, the shortest interval between operations was seven months. The symptoms in this case recurred three months after the cholecystostomy. At the second operation, in addition to a mass of adhesions, stones had again formed in the gallbladder, and stones were also found in the common duct. The gallbladder was then removed, and the common duct emptied and drained. In another case—empyema—in which the colon bacillus was cultivated from the pus, the symptoms returned about seven months after the draining of the gallbladder. At the secondary operation—cholecystectomy—the pancreas was found chronically and markedly diseased.

The average interval between operations in this group was about five years and nine months, the average period of freedom from symptoms being about two years and three months.

In the fifteen "ectomized" cases, in addition to adhesions which were present in all but one, reoperation was necessitated by the presence of fistula in four instances, common duct obstruction, stone or stricture, nine, and pyloric obstruction three. Three of the patients in the group failed to derive any benefit from the primary operation; of the others, the longest interval of freedom from symptoms was four years, the average being about four months, and the average interval between operations about eight and a half months.

In considering my personal cases (those in which the primary and secondary operations were done by me), I find that in eight the symptoms recurred after primary cholecystostomy, one after choledochostomy, and ten after cholecystectomy, or 1.3 per cent. after removal and 10 per cent. after drainage operation.

Excluding the fifty-one cases of the first group (in which the patients were primarily operated on elsewhere), a primary cholecystectomy was performed in 611 and cholecystostomy in seventy-eight cases; other primary operations consisted of cholecystoduodenostomy, 27; choledochostomy, 11; choledochoduodenostomy, 1; exploratory, 16; pancreatostomy, 4, and duodenotomy, 1. The last represents a case of carcinoma of an aberrant pancreas found in the duodenum and excised.

The longest interval between operations in the drained cases was fourteen years, the shortest one month, with an average of six years and four months, while freedom from symptoms averaged three years, the longest period being thirteen years and the shortest one month.

Of the fourteen patients whose gallbladders were removed, five remained well for a period varying from two months to two years, two were not benefited by operation, and seven required secondary operation during convalescence.

Taking this recurrent series collectively, we find the pathologic condition most frequently noted after operation to be adhesions (noted thirty-nine times), while the most potent cause for return of symptoms after operation proved to be stone in the gallbladder and ducts (twenty-six), which coincides with our pre-

* Read before the Brooklyn Surgical Society, Feb. 5, 1920.

vious experience. Next in frequency, in the order named, were: persistence of infection, cholecystitis, seventeen; fistula, eleven—biliary, nine, duodenal, two; common duct obstruction, ten; chronic pancreatitis, eight; pancreatic lymphangitis, six; cholangeitis, six; pyloric obstruction, five; dilatation of ducts, five—common duct, four, cystic duct, one; carcinoma, four—pancreas, two, gallbladder, two; stricture of the ampulla of Vater, two. Some of the cases presented one or more of the conditions mentioned.

ADHESIONS

It thus appears that adhesions were noted in 52 per cent. of the recurrent cases. The damaging and symptom-producing adhesions are principally those that form after cholecystectomy, and bind the duodenum, in some instances with the pylorus, the great omentum, and not infrequently, the hepatic flexure of the colon to the under surface of the liver. The symptoms caused by this deformity do not as a rule make their appearance for some time after the operation, or until they are in the process of organization and have reached the stage of contraction. There are exceptions to the rule, however, as for example persistent vomiting coming on from one to two weeks after operation, making it impossible to nourish the patient by mouth and where lavage demonstrates considerable gastric retention. I have seen this complication several times and for its relief have been obliged to do a posterior gastro-enterostomy, after which convalescence was rapid and uninterrupted.

It is generally admitted that gastro-enterostomy has its greatest usefulness in pyloric obstruction, and ulcer of the duodenum and stomach, but the operation also has a distinct place in a certain class of complicated gallstone cases. The very fact that gallstone disease, without operation, or after operation, can cause a condition requiring gastro-enterostomy should of itself be enough to do away forever with the expression "simple gallstones."

Ulcerative communication between the biliary passages, the stomach and the duodenum, not infrequently seen by those of us operating on patients previously operated on for gallstone disease, is a well-known phenomenon. That this can and does result in obstruction to the onflow of the stomach contents which, I am sorry to say, is not always recognized by the diagnostician, I know to be true.

Deferred action in these cases is inadvisable, and medication ineffectual. Rectal alimentation is a makeshift. Filling the rectum with sodium bicarbonate and glucose is not a very pleasant procedure, nor does it do any good except for the sorry consolation it may give of having done something for the patient, who usually dies.

In late cases of duodenal and pyloric obstruction I find it safer to do a posterior gastro-enterostomy than merely to separate adhesions, safer in that it is more permanent and less likely to require further operation. We all know that adhesions tend to recur and that nothing will prevent their formation if the raw surfaces cannot be covered with peritoneum. I have mentioned duodenal obstruction before pyloric, as in my experience the duodenum is more often obstructed than is the pylorus. In an old case of extensive adhesions in which the viscera normally in relation with the gallbladder are matted into an almost unrecognizable mass, the operation of separating and covering the denuded surfaces is likely to be a very difficult procedure attended with great risk of tearing the duodenum and in some instances the colon. I have had this happen, and have had to resect the torn duodenum with the pylorus and make a posterior gastro-enterostomy.

The comparative ease with which the duodenum can be repaired so as not to expose the patient to the risk of a duodenal fistula, a most dangerous and difficult proposition with which to deal, reads well and sounds well, but the seriousness of it must ever be borne in mind. Occasionally after separating the adhesions and disentangling the viscera I interpose a portion of the great omentum between the liver, the duodenum and the pylorus, and have had no cause to regret the maneuver.

When the removal of the gallbladder is carefully and anatomically done, few adhesions should follow the operation. The gallbladder being fully exposed, the neighboring viscera well protected and kept out of the way by properly placed moist gauze pads, not gauze towels (held in place by retractors), with the gallbladder held taut, as it were, the first step in the operation is the opening of the right free border of the gastrohepatic omentum and the identification of the common, cystic and hepatic ducts and the cystic artery, which, with the hepatic artery, may be found anomalous. Anomalies of the ducts or arteries make little difference to the operator who knows his anatomy and does the operation in this manner. Lack of care in grasping the cystic duct with hemostatic forceps or the cystic artery, if perchance it has been severed, is a frequent cause of injury to the common or hepatic duct with stricture or obstruction of the duct as a result.* I refer to this later. For the occasional operator, therefore, I would suggest a drainage operation and not removal of the gallbladder. It is better for the patient to run the risk of recurrence of gallstones than be left with either a damaged common or hepatic duct, a condition I have had to deal with a number of times, and which warrants me in being very emphatic on this subject. In doing many hundreds of operations for gallstone disease, one becomes more or less familiar with the danger signals. I have never taken any stock in the theory of biliary duct angulation due to adhesions or the traction of a movable kidney as the cause of symptoms of gallstone disease, particularly jaundice, because I have not encountered any instances of the kind in my numerous operations.

That adhesions form after a drainage operation is true; but they are neither so dangerous nor so productive of serious trouble as are the adhesions that follow removal if the operation is not very gently and carefully done.

NEW STONE FORMATION

The second most common cause of recurrence of symptoms is the presence of stone or stones. With few exceptions the stones found at the second operation were probably present at the primary operation but were not detected. The time elapsing between the two operations, or perhaps a third one, has a bearing on the subject. Even though, at the first intervention, all of the stones that were palpable to the finger or that could be removed with the scoop were taken out, subsequent stone formation occasionally takes place. It may happen that small granules of stone adhering to the mucosa of the gallbladder are present in the neck of the latter, or in the common or the hepatic duct, or

its ramifications, and subsequently develop into one or more good-sized stones. Often after opening a gallbladder that has been removed I have seen such tiny stones adhering to or embedded in the mucosa. How long a time is required for these stones to develop cannot be definitely stated. Some of the patients returned in a few months, others remained well for thirteen years.

When a number of years have elapsed between the original operation and the reoperation there is every reason to believe new stone formation has taken place. And in nearly all cases, as before the first operation, a history of infection will in all likelihood be obtained for the interval between operations. The sequence of events in gallstone formation I believe to be: infection, inflammation, obstruction to drainage, retention—bile stasis—proliferation of epithelium, formation of cholesterin, etc. In recurrence after drainage operations we know that it is not uncommon to find stones. For the recurrences after removal of the gallbladder, with the subsequent presence of stone or stones in the common duct or the hepatic duct, the most plausible explanation is that a small stone located high up has descended and has lodged either in the hepatic or in the common duct and there increased in size until it is too large to be passed and has thus caused obstruction. I have observed this in a number of instances; in fact, I have seen it occur three times in the same patient before obtaining complete freedom from recurrence. In some of these cases I have been able to predict the probability of a return of symptoms, especially when I had been able to feel a stone high up in the duct, but could not remove it; or when, having brought the stone into the hepatic duct, it has slipped away and has been lost; or when I have found the ducts filled with sandy material, and when, after removing as much of the latter as possible, with the ducts laid open as far as possible, I have instituted prolonged drainage. Even in these cases it is no surprise to learn of subsequent common duct obtruction by stone.

CHRONIC CHOLECYSTITIS

The third most common cause of recurrence—persistence of infection—in the shape of chronic cholecystitis, I believe to be inexcusable. First of all, the frequency of recurrence from this cause lends support to the theory that noncalculous cholecystitis is a clinical entity distinct from the calculous gallbladder inflammation, and justifies removal of the gallbladder in such cases. Furthermore, it is inexcusable, in view of the fact that dyspepsia or chronic indigestion is not a clinical entity of itself, but the accompaniment or the result of a greater or less degree of a pathologic condition in one or the other of the abdominal viscera, and that next to appendicitis, the most common type of indigestion is gallbladder dyspepsia. The differentiation between the two is not always possible except by operation, and even then one cannot always tell whether or how far the appendix is also responsible for the symptoms, in those cases in which the gallbladder has undergone pathologic changes. Owing to this uncertainty, it becomes necessary in the majority of cases to remove both the appendix and the gallbladder. This brings up the question of priority of responsibility for the symptomatology. You are all, no doubt, aware of my conviction that the guilt for most of the upper abdominal ailments lies primarily within the appendix, although I may say in passing that I am not unmindful of other possible sources of focal infection. How rarely do we find an appendix, removed as a routine procedure in our abdominal operations, that is not diseased, and markedly so, in most instances?

Chronic cholecystitis is not always difficult to diagnose; it can generally be recognized by a proper correlation of the history and the results of physical examination, especially local tenderness and more or less local rigidity. In cases of doubt we can call on the roentgen ray and various laboratory methods of examining the condition of the stomach, duodenum, pancreas, intestinal tract, etc. Having once arrived at the diagnosis, prompt action is essential. Dilly-dallying with medicines, in my experience, not only profits the patient nothing, but rather favors further visceral involvement and the possible extension of the process by way of the lymphatics or the blood stream to other important organs. This possibility is well illustrated by the researches carried on in the pathologic department of the Lankenau Hospital under the able direction of Dr. Stanley Reimann, whose investigations I have incorporated in this paper. This interesting work of Reimann, I believe, should settle the question of medical versus surgical treatment of persistence of infection in chronic cholecystitis and its responsibility for so large a percentage of recurrences after cholecystostomy.

OTHER CAUSES OF RECURRENCE

The recurrent series includes ten cases of noncalculous common duct obstruction. Six were due to stricture, three to scar tissue, and one to ulceration.

The principles involved in the treatment of obstruction of the common duct by stricture, scar tissue and ulceration are practically the same. In stricture of the common duct, whether annular or linear, the duct is laid open to the extent of involvement in the line of the duct, and drainage established by the T-tube; for annular stricture involving a wide portion of the duct resection and end-to-end anastomosis is best; or if the stricture is too near the duodenum to make this feasible, anastomosis of the proximal end into the duodenum and closure of the distal end can be done, this layer of suture being reinforced by the great omentum. These operations I have done a number of times with good result.

In ulceration of the duct, the treatment is practically the same as for stricture. Obstruction of the duct by scar tissue occurs where the duct has been cut away, and the scar tissue forms in the shape of a cord connecting the two ends. Under these circumstances the most difficult portion of the operation is to identify the lower end of the duct. The proximal end, unless well within the transverse fissure of the liver is, as a rule, not so difficult to identify if we aspirate with the hypodermic syringe. When the greater portion of the duct is destroyed, it is best to mobilize the duodenum and anastomose the proximal end to the duodenum. Sometimes the T-tube or a small piece of rubber tubing introduced into the end of the duct and the duodenum can be used to advantage in the anastomosis. I always reinforce the anastomosis with the greater and the lesser omentum. This, however, is difficult and trying surgery, calling for the greatest gentleness of manipulation, patience and utmost skill, ingenuity and judgment.

Biliary fistulas, of which there are nine in the series, are practically all the result of stone in the common duct, and can be obliterated only by relieving the

obstruction. This type of fistula rarely is due to malignancy, but when attributable to such cause is nearly always irreparable. Quite as serious is duodenal fistula, reported twice in the series. Resection, pylorectomy and gastro-enterostomy are the procedures indicated, but they are not always possible and not always successful, owing to the depleted condition of the patient.

It will be noted that chronic pancreatitis and chronic pancreatic lymphangitis were the cause of twelve recurrences. While pancreatic lymphangitis is frequently corrected by removal of the gallbladder, this does not apply to chronic pancreatitis, particularly in the long-standing cases. Although I have so often called attention to the importance of pancreatic lymphangitis as a forerunner of chronic pancreatitis, I cannot refrain from mentioning it once more as a factor to be seriously reckoned with in gallstone disease surgery. Drainage, of course, is the sine qua non in the presence of chronic pancreatitis, and, if, owing to diseased condition of the gallbladder and the cystic duct, cholecystotomy is not possible, drainage must be established through the common duct.

Duct drainage is also indicated in cholangeitis, the result of gallstone disease, and must be continued for a number of weeks. I have known patients who have carried a drainage tube in the common duct for as long as four years; it is only in very obstinate cases, however, that such prolonged drainage is required. The simplest means of accomplishing this is by way of the gallbladder; but when this is not feasible, drainage through a cholecystoduodenostomy or by way of the common duct will be necessary. Incidentally, I may remark that biliary cirrhosis may result from chronic cholangeitis if not given the benefit of radical surgery.

Dilatation of the common duct in the presence of an irremovable cause is best treated by a choledochoduodenostomy—not by any means a very difficult thing to do with the duct enlarged.

Benign stricture of the papilla of Vater, which is not infrequent, I have always been able to correct by dilatation through an incision of the common duct.

Carcinoma of the head of the pancreas, as well as carcinoma of the ampulla of Vater, or the common or hepatic duct cannot always be differentiated except by opening the abdomen; nor can the differentiation of obstruction of the common duct by a silent stone always be differentiated from malignancy. I have seen a number of confusing cases which were cleared up only by operation. Carcinoma of the gallbladder is another one of the uncertain diagnoses, except in the presence of a palpable swelling which can be identified, or perhaps by roentgen-ray demonstration. It is worth mentioning that the majority of cases of carcinoma in which I have operated have been associated with stone; furthermore, I have no hesitancy in saying that I believe persistent cholecystic infection is primarily the responsible agent in the causation of this most unfortunate condition. It may not be out of place for me to mention a case of carcinoma of the fundus of the gallbladder that had not metastasized, but was adherent to the hepatic flexure of the colon, indenting the colon to such an extent that the roentgen ray seemed to indicate carcinoma of the bowel. This patient has remained well for more than two years since the operation (cholecystectomy).

The great variance between recurrences after radical surgery of the gallbladder and those that take place after conservative surgery leads to the manifest conclusion that radical treatment gives the greater prospect of a permanent cure. Perhaps if the work recently reported by Vincent Lyon[1] of Philadelphia on the physiologic drainage of the gallbladder based on Meltzer's theory of contrary innervation can be developed into a more practical one—practical in the sense that any but the highly trained specialist can make use of it—we may obtain a valuable aid in early diagnosis and the possible prevention of the serious consequences of biliary stasis. For the present, however, radical surgery, although it falls short of being ideal surgery, is the best means we have of removing a pathologic condition and its pernicious effects. "If thy right hand offend, cut it off."

PATHOLOGIC REPORT BY DR. REIMANN ON RELATION OF STREPTOCOCCUS TO GALLBLADDER DISEASE

In classifying the pathologic histology of gallbladders, we have recognized an interstitial involvement of both acute and chronic nature in by far the large majority. Simple involvement of the mucosa was seldom encountered. The interstitial involvement, that is, infiltration of either acute or chronic inflammatory products into submucosa, muscularis and peritoneum, means only one thing—that organisms or their toxins or both are present in the walls of this organ. This picture makes plain the reasons for the frequent peritoneal adhesions, pancreatic lymphangitis and lymphadenitis, and chronic pancreatitis. Infection, of course, in the largest proportion of cases comes from within the lumen of the gallbladder.

A direct way of approaching this subject is afforded by the method developed by Rosenow and his associates. It consists of removing surface infection by either washing the organ, taken directly from the hands of the surgeon, in large volumes of saline solution, or dipping it momentarily in boiling water, then grinding it up in a meat grinder, and triturating with sand and saline solution. This procedure is carried out in a specially constructed box which allows of sterilization. The ground-up tissue is then planted in special mediums. Rosenow's results have indicated the presence of streptococci in the walls of the gallbladder as well as in other organs.

Forty-five gallbladders were treated by us in this way, and streptococci, all of the *S. viridans* variety, were found in nine instances, or 20 per cent. The pathologic examination of these gallbladders disclosed that all had a marked interstitial involvement. In more than half, there were acute changes engrafted on obvious preexisting chronic ones. Seven of the nine contained calculi. Other organisms were detected in many; but, since the discovery of streptococci was the main object, these were not definitely identified. In the other thirty-six specimens, practically half showed lesions that were confined entirely to the mucosa. The others showed more or less interstitial infiltrations of a chronic nature. Four showed acute involvement as well.

Surgical and pathologic experience demonstrates over and over again that in most instances the gallbladder in an operative patient has been the subject of at least several acute inflammatory processes. In a number, however, there has possibly been present a chronic, slowly progressing inflammation from the start.

1. Lyon, B. B. V.: Diagnosis and Treatment of Diseases of the Gallbladder and Biliary Ducts, J. A. M. A. **73**: 980 (Sept. 27) 1919.

The clinical experience is that a gallbladder which has once given trouble and recovered without operative interference will, in a large majority of instances, make its presence known again, usually in a more unfavorable way. This is quite reasonable when streptococci can be so easily demonstrated in the walls of at least 20 per cent. (in Brown's series in 50 per cent.). The ability of streptococci to remain latent for long periods of time is too well known to require emphasis. A scheme of treatment based on the laws of contrary nervous innervation must take this infection of the walls into very serious consideration. The instillation of magnesium sulphate and other such materials by tube into the duodenum may cause the gallbladder to empty itself, and thus be of advantage in draining infection from within the lumen of the organ. It seems unlikely, however, that infection within its walls can be removed by this means.

The question of elective affinity of these streptococci was investigated, and careful examinations were made of the gallbladders of rabbits in which recovered human streptococci were intravenously administered. It was recognized that rabbits are, on the whole, somewhat resistant to streptococci. The organisms were isolated from the human gallbladders, were suspended in saline solution, and injected intravenously into a number of differently controlled animals. Two special sets were used: one was presumably normal, and in the other a point of lowered resistance was induced by pinching the gallbladder with a hemostat. None of the animals died from the injection of streptococci. They were killed at various intervals, and the organs and fluids examined and cultures taken. No streptococci were recovered from any specimen in any case after the second day after injection. They were recovered, however, as a routine, in all the organs and fluids in animals killed on or previous to the second day. These included the gallbladder, bile, liver, kidney, heart's blood and spleen. Cholecystitis was not present grossly or microscopically in any of the previously uninjured gallbladders. The time allowed to elapse between operation and injury of the gallbladder, and the injection of the streptococci, varied from immediately to two weeks. After several days, recovery from the operation, as evidenced by the behavior of the rabbit, was perfect. Microscopically, these injured gallbladders showed the usual processes of necrosis to fairly complete organization at the site of injury, but no especial lesion beyond this zone of reaction.

From the whole series of experiments, the conclusion must be reached that the particular streptococci recovered from human gallbladders and injected intravenously into rabbits showed no elective affinity for the gallbladders of the animals; at least not with one injection of what seemed an adequate number of organisms.

This conclusion in itself, however, does not negative the importance of the streptococci in the human gallbladder. It is only a fact in the biology of the organisms. Their importance in the particular human being from whom they were recovered cannot, of course, be positively evaluated; but the following points may well be remembered:

With streptococci in the gallbladder, a chronic toxemia may be present for long periods of time; a constant stimulus for lymphangitis and connective tissue proliferation is present, and an opportunity for a general bacteremia is always at hand.

IDEALS AND THEIR FUNCTION IN MEDICAL EDUCATION *

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The influence of the war on medical research, public health and medical education has been notable. Medical army officers of different nations have been in close association; research councils have exchanged suggestions and ideas; investigation has been stimulated; new possibilities of immunology have been discovered; important advances in surgical technic have been made.

Public health policies have been profoundly affected; camp sanitation has been carried to higher levels of achievement; the American army in Europe made a new record in the control of venereal diseases. The League of Red Cross Societies represents a movement in the interests of preventive medicine on an international scale. The work of the International Health Board in many countries has played an appreciable rôle. In all this, standards and methods of medical education have been necessarily involved.

Evidences of an almost universal interest in the training of physicians and public health officers accumulate. The British "unit" plan, which, with the opening of this year and under the auspices of the board of education, is being given a trial in four medical schools of London, is a significant experiment. In Belgium there is agitation for a reorganization of medical training under the auspices of the University of Brussels. Pathology and public health departments have been introduced in two medical schools in Brazil, and are influencing the other divisions of these institutions. A strike of medical students in Lima, Peru, against the alleged inefficiency of professors in the medical school is a symptom of the times. In China a modern medical school is being opened in Peking under American auspices. At Tsinanfu and Changsha, progress is being made. The University of Hongkong has a program for the modernizing and development of its medical department. The Chinese government medical schools are giving evidences of awakened interest and of improved methods. The Siamese government is seeking cooperation in the creation of a medical school in Bangkok. In the Near East there are several projects for new centers of medical teaching. Medical students are coming to the United States in increasing numbers from Japan, China, Czechoslovakia, Poland and Brazil.

IDEALS OF MODERN MEDICAL TEACHING

In order to measure achievement and to guide progress there is need of ideals or standards by which to appraise existing institutions and methods. Without tests of this kind there is danger that opportunism, provincialism, even a narrow nationalism, will prevent the development of medical education on a broad, international basis. To be of value, ideals must not be merely *a priori* and abstract aims: They must be rational projections of tested experience; they must combine, in one organic whole, elements each of which has somewhere proved its value. For example, the American type of medical education has incorporated features from the German laboratory institute, from the English clinical clerkship, and from other sources.

* Read before the Annual Congress on Medical Education and Licensure, Chicago, March 1, 1920.

The service which ideals and standards can render has been conspicuously illustrated by the Carnegie reports on medical education in the United States and in Europe, and by the activities of the Council on Medical Education of the American Medical Association. Thanks to these agencies, the main outlines of an efficient system of medical education have been worked out and generally accepted.

It is well to recognize the relativity of ideals. In human institutions there are no absolute standards. The highest ideal may be approximated in a few medical schools in which methods may be tested and leaders trained; but it would be a serious mistake not to recognize various degrees of achievement. The influence of local conditions, the possibilities of economic support, relations with other university units, must be taken into account. All that can be confidently affirmed is that some institutions fall below any standard that can be recognized as guaranteeing results which will safeguard the public and protect the profession. The number of such schools in the United States grows steadily smaller.

There is danger that the existence of a standard may force a formal rather than a real compliance with ideals. A premature effort to conform to an accepted standard may do positive harm. For exmaple, there is reason to believe that in the case of medical schools in the South, where high school systems have had to be developed within a brief period, there has been an overstimulation of secondary and college education; that three-year high schools have changed to a four-year curriculum with little or no additional resources or increases in numbers and efficiency of teaching staff, and that colleges have offered courses which they are not prepared to give efficiently. Moreover, the "Class A" of the American Medical Association, having been accepted by state boards of medical examiners and thus become a part of the official machinery, has been extended in such a way as to produce serious anomalies. These will doubtless be largely removed as a result of the new survey which has recently been completed.

One of the ideals of modern medical teaching which needs constant emphasis is the provision of the best type of medical care for the sick. Laboratory and clinical methods must be thought of as a protection to the patient. Careful diagnosis, resourceful treatment, constant watchfulness are sources of safety and hope to those who come under the care of a modern university hospital. The prestige of the clinical teachers who are in charge is always at stake. The mutual scrutiny of members of the teaching staff, the alertness of students, together with unremitting search for new truth and its application to disease, make the teaching hospital the best place for the sick.

ESSENTIALS TO THE MAINTENANCE OF IDEALS

The widening conception of the physician as a social functionary, the enlarging theory of medicine as something which deals with the whole patient in his social environment, the demand for knowledge, insight and intelligent sympathy, the increasingly scientific nature of modern medicine call for a sound and broad training as a prerequisite for medical education. The demands made on the secondary schools and colleges are insistent and unrelenting. Attention has often been called to the serious situation which is created by this need of thorough preparation. Efforts must be made to improve and abbreviate the elementary and secondary curriculum. Experts in the field of education are confident that time can be saved. By the frequent promotion of abler pupils, by the elimination of useless repetition, by concentration on fundamental things, by more intelligent methods of instruction it is reasonable to believe that two years could be saved and better results secured.

Medical education is so dependent on the general educational system that progress will necessarily be slow. This is especially true in the South. The Canadian plan for a six-year medical course so far as the better schools are concerned reflects a dissatisfaction with the preparation of students. It is to be hoped, however, that this policy will be temporary; for, as Dr. Colwell has clearly shown, there is great value in a nonmedical school preparation if this can be of the right sort.

Limitation of numbers is essential to the maintenance of ideals. There is a ratio between students and laboratory and clinical teaching facilities which cannot be safely ignored. The days of mass lectures are numbered. The constant use of microscope and culture tube by the individual student, the system of clinical clerkships, the reduction of bedside groups to a small number, the need of continual contact between teachers and students preclude the didactic, wholesale devices of earlier days. To admit a larger number of students than can be properly trained in accordance with scientific methods is vitally to impair the character of a school's work. It is a sacrifice of ideals. If it is desired to provide for larger classes, duplicate units of staff may be added and existing laboratory facilities more completely utilized. The corresponding duplication of hospitals, however, involves large additional costs.

In medical education the relation of the laboratory and the clinical years is organic. The antithesis which is often set up between these two aspects of medical education is most unfortunate. In the first and second years, the chief emphasis is laid on work in the laboratories; but this training ought to be extended right into the clinical phases of the curriculum. While it will usually happen that laboratory teachers will be graduates in medicine, many able laboratory men without the M.D. degree have demonstrated their capacity to develop cooperative and sympathetic team-work with clinical departments. The students in the laboratories should be frequently reminded of the bearing of their present work on their future responsibilities. The realization that the ideals of the laboratory are inseparable from rationalized clinical experience is equally essential. A few institutions are making systematic efforts to bring first and second year students in contact with dispensary and hospital problems, and into association with clinical teachers through occasional clinical lectures. The geographic separation of the laboratory work from that of the hospital and dispensary is a serious handicap to effective education.

In the clinical years it is essential to develop observation and reasoning power, to train students in the recognition of the early signs of disease. There is a certain value in the extravagant statements of a man like McKenzie who, in the stress he lays on the importance of contact with patients and of observational methods, seems to discredit the diagnostic resources of the laboratory. The dispensary as a means of educating students in the recognition of disease in its early stages needs greater emphasis. It is time to reconsider the whole problem of dispensary organization. Frag-

mentary periods of service by busy practitioners, hasty diagnosis, sometimes by clerks, are not consistent with the best interests of the clientele and do not provide satisfactory conditions of medical instruction. One of the pressing problems of medical education is found just here. Instructors must be paid and be asked to give a better type of service under more favorable conditions. The student needs to assume responsibility under supervision. It is important for him, in connection with social service, to make domiciliary visits, and to recognize the environment of the patient as an essential part of the problem of disease.

As to the hospital, it is recognized that effective teaching can be secured only in an institution which is under the complete control of the medical school. The devices of clinical clerkships, the individual responsibility of students, close relations between bedside and laboratory, the proper organization of the teaching staff, permanence of tenure, team-work, necropsy conferences, case conferences with physicians and social service workers, are all factors in the development of clinical training of the right type.

The ideals of clinical teaching involve one of the moot questions of contemporary medical education. The analogy of the development of laboratory leadership from the practitioner to the professional teacher is being applied to the problem of clinical instruction. Perhaps in the discussion of the "full-time" plan too much stress has been laid on the word "time." It might be better to use other terms as, for example, vocational and avocational teaching. That leadership in clinical teaching should be in the hands of men whose chief concern is the care of hospital and dispensary patients, the teaching of students, and the prosecution of research is struggling successfully for recognition. In other words, it is increasingly obvious that the vocational rather than avocational principle is to prevail in this field.

Illuminating experiments are being tried with reference to this ideal. Johns Hopkins, Yale, Washington University and the University of Chicago are committed to a trial of the idea of full-time in the sense that heads of the chief department and their immediate staff concentrate on their university duties. Other proposals call for chief concentration on hospital teaching, with some opportunity for incidental consultation practice. In still other cases, young resident physicians and surgeons will give their whole time to the organization and administration of hospital services and instruction, while the practitioner or avocational teachers carry responsibility for a large part of the teaching. This situation is in harmony with experimental, scientific methods. Under varying conditions the different plans will be given a test. The results will be watched with interest.

THE UNDERGRADUATE CURRICULUM

The question of differentiation in the undergraduate medical course is raised in one or two important ways. The curriculum is now so overcrowded that the proposal to introduce new subjects is naturally and justifiably resisted. There is now no room for specialties except in a superficial way. Specialization in the ordinary sense is quite impossible. Differentiation, however, for various forms of preventive medicine, e. g., public health administration, industrial hygiene and mental hygiene, seems feasible to some degree. Elective courses, especially in the fourth year, are being offered. It seems well to secure sufficient flexibility so that men who have definitely chosen careers in some form of institutional or public health work may combine with their technical preparation a fundamental and sound course in medicine.

In spite of the overcrowding to which reference has been made, there is an increasing demand for the introduction in undergraduate teaching of such subjects as preventive medicine, psychiatry, institutional administration and some knowledge of social amelioration through clinics, popular education, improved housing, better food, recreation and the development of community responsibility. The introduction of medical sociology in the premedical course would be of distinct value. Something may be accomplished through lectures, conferences and visits included in the regular curriculum. Washington University Medical School is inaugurating a plan of this kind. The case conferences with social service workers in the Massachusetts General Hospital have already been mentioned. Dispensary experience has an important bearing on this subject. It is desirable that more and more emphasis should be laid on the medical practitioner's social responsibilities and on the changing standards and ideas of the times with respect to medicine and public health. Such a spirit or attitude, however, will be a relatively slow growth. Chief reliance must be placed on the daily influence of the teaching staff. Unless instructors are in sympathy with these newer developments, the mechanism of extra lectures and other devices will accomplish little.

The advancement of medical science will be a conscious purpose of the ideal medical school. Research in such an institution is not an incidental by-product or merely a means of stimulating teachers. It is a definite and persistent aim. It involves constant conference and planning and cooperation by all the departments concerned. Independent institutions for research cannot be expected to assume the entire responsibility in this field. Most of the workers for such institutions must be trained in the medical schools themselves. This responsibility for research calls for large expenditure for buildings, equipment, supplies and, above all, for a staff capable of making significant contributions to medical science. Only a few centers, in the nature of the case, will be in a position to perform this function of investigation in a systematic way. It is a mistake for institutions without adequate resources in men and materials to deflect to research time and energy which should be devoted to the undergraduate teaching. This is not to imply that many individuals even in such schools cannot or will not find some opportunity for investigative tasks.

GRADUATE MEDICAL STUDY

The crowding of the undergraduate curriculum, which has already been mentioned, means that specialist preparation must become the subject of graduate study. Postgraduate short courses have their value, but genuine graduate study can be carried on only where the best opportunities for laboratory training and clinical experience under the right sort of leadership are available. The University of Minnesota-Mayo Foundation experiment is showing promise. More than 130 graduate students are pursuing courses which lead to higher degrees on a university basis. In other institutions, similar movements are under way. As in the case of research, only a few institutions can be equipped and manned for offering genuine graduate instruction.

The proposed one-year courses for the specialties under the auspices of the New York Association for Medical Education suggest interesting possibilities. The clinical resources of a great city, and the presence of a large number of men recognized as specialists, offer an opportunity for the organization of teaching facilities. Success would seem to depend on the degree to which qualified teachers can give sufficient time to the work under satisfactory conditions of laboratory service and of access to controlled clinical material.

Continuation courses for practitioners represent a need in medical education which deserves careful consideration. Modern medicine insists that access to laboratory and hospital is essential to the maintenance and growth of professional power. Yet a great majority of physicians have no contact with these agencies. These practitioners are dependent on journals and on short courses for keeping abreast of professional progress. A relatively few take full advantage of these opportunities. There is pressing need of a widespread movement to enable physicians to continue their medical education. Before the war the American Medical Association offered a postgraduate course, a combination of correspondence instruction with group conferences. The Wisconsin University Extension Division is now maintaining a system of clinical instruction throughout the state. The possibilities of continuation courses in connection with diagnostic laboratories, rural hospitals and public health centers are obvious. There seems to be an opportunity for the development of a country-wide system of medical education for practitioners.

TWO GROUPS OF MEDICAL SCHOOLS

Judged by the criteria which are suggested in this paper, existing medical schools fitting the present need fall into two general groups:

1. *University Centers for Teaching and Investigation.*—The chief characteristics of these institutions are: broad and thorough preparation; limitation of numbers in proportion to facilities and staff; well-rounded laboratory equipment with professional teaching corps; complete control of adequate hospital and dispensary facilities with vocational leadership in the clinical departments, which include the chief specialties; practitioner or avocational clinical teachers organized systemically into a unified staff; geographic concentration of all phases of plant and instruction; laboratories and clinics in close relations of cooperation and interdependence; research a conscious purpose; facilities for graduate study.

2. *Training Centers, Parts of Academic Institutions.*—Two-year college requirement; limitation of numbers; fundamental laboratory facilities with professional teachers; control of appointments to hospital and dispensary staff; practitioner clinical teachers well organized in long service periods, assisted by full-time resident and other assistants; concentration of buildings and work; cooperation between laboratories and clinics; some opportunity for research by staff members.

ASSISTANCE TO MEDICAL EDUCATION

As to the policy of the General Education Board and the Rockefeller Foundation with regard to assistance to medical education, it may be said that there is no one, inflexible type of organization which it is proposed to suggest to all institutions. Aid has been given and will continue to be given to a few centers of the higher type, but assistance is also being considered with respect to a number of institutions less highly developed. The General Education Board cooperates with medical schools in the United States, while to the Rockefeller Foundation falls the opportunity to work with medical centers in Canada and in other countries.

61 Broadway.

THE LARGER FUNCTION OF STATE UNIVERSITY MEDICAL SCHOOLS *

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Within recent years there has come about a changed conception in regard to the responsibility of the general public for welfare policies such as public education, public improvements, standards of living, and health. Within the last century we have seen America develop a great public educational system in which the state has undertaken to make provision for the education of persons of types of ability ranging from the subnormal to the keenest student in the land. As the years have gone by, each decade has shown a markedly increased willingness on the part of the state to provide for new variations in the educational needs of the public, until at the present moment it is hard to find a state that has not only assumed large responsibility for the training provided in elementary schools, high schools and ordinary collegiate institutions, but also made provision for the training in technical fields—agriculture, engineering, commerce, law, medicine. In fact, an analysis of the development of state education confirms the prophecy that as the years go by the public, operating through the state, will ultimately respond to any well thought out demand on the part of educational leaders.

Paralleling this development in education has come an ever increasing conception of public responsibility for the care of certain cases of defectives, the insane, tuberculous and others. States have vied with each other in the organization and development of elaborate systems for the care of these unfortunates.

In recent years there has come a growing consciousness of the importance of the period of youth in a scheme of life such as ours: witness legislation for compulsory education, continuation schools, and regulation of the hours of child labor.

It is but a step farther for the state to interest itself in the health of children. It is obvious that neglect in the care of children means not only an enormous economic loss in the matter of self help and production, but also untold suffering in succeeding generations.

This interest in the health of children has been expressed locally by provision for medical inspection and school nursing. Perhaps Michigan is entitled to the distinction of being the first state to provide a statewide hospital service for children needing attention. Iowa quickly followed, and later Oregon made similar provision.

LEGISLATION IN IOWA

Five years ago the general assembly of the state of Iowa enacted the Perkins law, which made provision for the surgical, medical and hospital care of all children in the state under 16 years of age whose parents

* Read before the Annual Congress on Medical Education and Licensure, Chicago, March 1, 1920.

were unable to meet the expense involved. Four years later, further legislation was enacted extending this type of service to indigent adults, so that at present the state of Iowa makes provision for the surgical, medical and hospital care in all cases which are considered remediable. This service is provided through the State University of Iowa College of Medicine, and includes service given in a dozen different departments. Thousands of patients have taken advantage of this provision. There has been a steady stream of deformed and suffering humanity pouring into Iowa City week in and week out since the first enactment of the law. Practically all of the infantile paralysis patients of the state have come to this hospital as either indigent or pay cases. The demand for orthopedic service has been so large that the state has undertaken the task of manufacturing her own braces and casts. The speech defect cases have been so numerous as to necessitate a special school for training in speech after remedial operations have been performed. Special diet laboratory facilities have been provided in connection with the infant feeding cases.

No service undertaken so far by the state in connection with any of its institutions has received greater approval on the part of the public. After two years of experience with this service to the children, the state was asked to provide a children's hospital to care for the cases. Despite the fact that this appropriation was sought during the war, there was not an opposing vote registered in either branch of the legislature. Two years later, when the proposal was made to extend these provisions to adults, there was not a single vote in opposition. In other words, since inaugurating the service five years ago, the two general assemblies have expressed direct approval of the service rendered without an opposing vote—a remarkabe record.

For many years the College of Medicine has been rendering special service to the wards of the state in the institutions for defectives. Hundreds of patients come each year from the state orphanage, and schools for the blind and deaf. The regular clinical service for which a charge is made has likewise attracted thousands from every part of the state.

Thus, with the addition of the indigent cases it can be seen that the hospital has really become a state hospital in every sense of the word. People in the most remote sections of the state think of this service constantly in connection with the problem of caring for children and adults who need remedial care.

The commitment laws have been drawn so as to provide for the cost not only of the remedial care but also for transportation of the patient, including the expense of a caretaker of the patient, when needed. The university makes its financial adjustment with the state authorities, thus simplifying the problem of collection on the part of the hospital. The conditions of commitment are made so simple and direct that there is the minimum of difficulty in getting patients into the service, as will be seen from a study of the first two sections of the law:

SECTION 1.—*General Provisions for Free Hospital Service.*—Whenever it shall appear to any physician, county supervisor, township trustee, public health nurse, overseer of the poor, policeman, priest or minister that there is any legal resident of his or her county over 16 years of age afflicted with any malady or deformitory which can probably be remedied by proper care and medical or surgical treatment, if said person, or the parent, parents or guardian or other person having legal custody of said person, as the case may be, is unable financially to provide proper care and medical or surgical treatment, it shall be the duty of such physician, county supervisor, township trustee, public health nurse, overseer of the poor, policeman, priest or minister to report the same to the judge of the district or superior court having jurisdiction in the county in which said person resides.

On the filing of such report with the judge of the district court or superior court as aforesaid he shall appoint some physician who shall personally examine said person with respect to the malady or deformity. Such physician shall make a written report to said judge, giving such history of the case as will be likely to aid the medical or surgical treatment of such deformity or malady, and describing the same, all in detail, and state whether or not, in his opinion, the same can probably be remedied. Such report shall be made within such time as may be fixed by the court and on blanks furnished as hereinafter provided. It shall also be the duty of said judge to have a thorough investigation made by the county attorney of his county regarding the financial condition of the said person, or of the parent or parents, guardian or other person having legal custody of said person, as the case may be.

SECTION 2.—*Procedure for Admission to Hospital.*—On the filing of such report or reports, said judge of the district or superior court, as aforesaid, shall fix a date for the hearing on the complaint and shall cause the person, or the parent or parents, guardian or other person having legal custody of said person, as the case may be, to be served with a notice of the hearing and he shall also notify the county attorney who shall appear and conduct the proceedings; and on such complaint, evidence may be introduced. If the judge finds that the said person is suffering from a deformity or malady which can probably be remedied by medical or surgical treatment or hospital care, and that the person, or the parent or parents, guardian or other persons having legal custody of said person, as the case may be, is unable to pay the expenses thereof, said judge may, with the consent of the said person, or parent or parents, guardian or other person having legal custody of said person, as the case may be, enter an order directing that the said person shall be taken to the hospital of the college of medicine of the state university of Iowa at Iowa City for proper hospital care and medical or surgical treatment; the expense of such hospital care and treatment to be met in the manner hereinafter provided.

Provided, that no such person shall be received into said hospital of the college of medicine of the state university of Iowa for care and treatment, unless, in the judgment of the admitting physician, there shall be a reasonable probability of such person's being benefited by such hospital care and medical or surgical treatment.

Emergency service is provided without waiting for the carrying out of this procedure.

Complete service is provided, including roentgen ray or radium, laboratory examinations, braces and even schooling for those of school age, and the best diagnostic and remedial care. The cost of everything exclusive of the salary of the staff is paid by the state on thirty-day settlements based on the number of patient-days.

The demands on the hospital have been growing steadily for many years. With the influx of more state patients it has been necessary to increase hospital facilities from 450 to 600 beds. The number of annual admissions is now around 15,000.

A few years ago the state board of health centered its laboratory work in the laboratories of the College of Medicine. The state epidemiologist is also a member of the staff of the College of Medicine. A public health nursing course has been authorized. The extension service in the field of follow-up work in the case of Perkins law children who have been treated in the university is proving to be one of the best forms of social welfare work. A part of the university's education program includes the distribution of thousands of bulletins on the feeding of schoolchildren, the care of infants, and the like.

In line with the general policy of coordinating the state wide service, the state has just authorized the creation of a psychopathic department at the university with a special hospital and adequate support for research work in this field.

This enlarged consciousness on the part of the public as to its responsibility in regard to health is by no means confined to a few states. Indeed, steps are being taken to secure the leadership of the federal government in assuming this responsibility. There is little doubt that within the next decade health service under some such general plan as outlined above will be provided almost everywhere. The states will have to determine whether or not they wish to establish this service in isolated hospitals as has been done in the past in the case of sanatoriums for the tuberculous, hospitals for the insane and the like, or whether they wish to coordinate this work with that of the training of physicians in the college of medicine.

While it is true that in some schools the supply of clinical material is so large that these patients would be of little value in connection with the training of physicians, yet in many states it would be disastrous from the standpoint of the teaching clinic for the state to establish such a hospital apart from the college of medicine, necessitating, as it would, constant duplication of the staffs of the two institutions. The waste would be calamitous. The experience in Iowa is such as to suggest that this type of work can most successfully be done in connection with the college of medicine.

CONCLUSIONS

Our experience leads to these conclusions:

1. In view of the great rapidity with which the demands on our staff and hospital have grown, it seems to us important to note that any state in attempting to provide this type of service should make very comprehensive plans on the material side, which should include liberal provision in space and staff not only for adequate service to the indigents but also for adequate provision for the ever growing number of pay patients.

2. It is very important that future plans include ample provision for the vigorous prosecution of medical research. Otherwise the teaching staff may easily be overwhelmed with routine, with a consequent slump in growth. Furthermore, the unusual clinical demands serve as a constant challenge to the student of medicine.

3. Since the success of the work is absolutely dependent on skill and devotion of the staff, it is essential that many adjustments in the conditions of teaching must be made. The problem of full-time teaching becomes more acute.

Satisfactory adjustments of these problems must be worked out if medical teaching is to be kept at the highest standard.

Other departments in the field of technical education have had to meet the same situation. Indeed, in the field of agricultural education a very large part of the function has been the providing of service for the public. So much is this true that it would be hard to conceive at the present moment of a college of agriculture without its elaborate organization in the direction of special agricultural service to the state. Within the next few years we may expect in many state universities just such close coordination in the problems of the training of physicians, furthering research that will contribute to the knowledge of the field and extending health service to the public.

To the degree that the colleges of medicine of the state universities are alert to these new demands and effective in their responses will these colleges become real leaders in this present movement looking toward the highest type of physical and mental efficiency.

CHANGES IN THE BLOOD IN INFLUENZA *

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AND

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The tendency to nosebleed, the bloody sputum and the hemorrhagic character of the lesion in the lung, in an uncomplicated case of epidemic influenza, give rise to the inference that there are changes in the blood in this disease which predispose to hemorrhage.

TABLE 1.—EFFECT OF SODIUM CITRATE ON CLOTTING TIME OF THE BLOOD

Name or Hospital Number	Date	Clotting Time, Minutes	Patient's Temperature, F.	Remarks
D.	2/ 6/20	15	100.6	Before receiving citrate
D.	2/ 6/20	7	.....	45 minutes after receiving 1 gm. sodium citrate intravenously
D.	2/ 7/20	7	.....	18 hours after foregoing dose of citrate
D.	2/ 7/20	3½	.....	1 hour after a second dose of 1 gm. sodium citrate intravenously
11278	2/ 6/20	10	105.0	Before receiving citrate
11278	2/ 6/20	5	.....	¾ hour after receiving 1 gm. sodium citrate intravenously
11278	2/ 7/20	7	.....	18 hours after the foregoing dose of citrate
11278	2/ 7/20	3½	.....	1 hour after a second dose of 1 gm. sodium citrate intravenously
11350	2/20/20	12	99.0	Before receiving citrate
11350	2/20/20	3½	.....	½ hour after receiving 1 gm. sodium citrate intravenously
11795	2/19/20	16	101.6	Before receiving citrate
11795	2/10/20	9	.....	½ hour after receiving 1 gm. sodium citrate intravenously
11795	2/20/20	9	.....	24 hours later
11795	2/20/20	9	.....	½ hour after receiving a second dose of 1 gm. sodium citrate intravenously
11844	2/20/20	14½	99.4	Before receiving citrate
11844	2/20/20	6¾	.....	½ hour after receiving 1 gm. of sodium citrate intravenously

It was for the purpose of inquiring into this point that the present study was undertaken, and this report is a preliminary summary of the results that were obtained.

The special features studied were the clotting time, the platelet count, the fragility of the red cells, and the number of leukocytes.

METHODS

For studying the clotting time, blood was drawn from the median vein into a syringe wet with physiologic sodium chlorid solution, and 1 c.c. was immediately inserted in tubes 1 cm. in diameter also wet with physiologic sodium chlorid solution. It was found that if the syringe was one of small capacity and the quantity of blood drawn only a little more than that necessary for the test, the clotting time was much shorter than if a large syringe was used and the quantity of blood drawn was several cubic centimeters more than necessary for the test. The cases in Table 3 were studied by the latter method. Care was taken to use exactly the same technic for test cases and the normal controls.

* From the Medical Clinic, City Hospital, St. Louis University School of Medicine.

For counting the platelets, the technic described by Wright and Kinnicutt [1] was used. Counts of normal individuals were made as controls.

For estimating the fragility of red cells, the method described by Hill [2] was employed.

TABLE 2.—EFFECT ON CLOTTING TIME OF ADDITION OF VARIOUS AMOUNTS OF SODIUM CITRATE TO BLOOD IN THE TEST TUBE

Amount of Citrate Added to 1 C.c. Blood	Clotting Time in Minutes					
	Patient 11350	Patient 11795	Patient 11795*	Patient 11844	Normal 1	Normal 2
Before Intravenous Administration of Sodium Citrate						
Plain blood; no citrate	12	16	9	14½	9	10
0.005 mg.	12	..	9	16	..	8
0.0075 mg.	11½	..	11	14½		
0.01 mg.	11	11	7	11½	..	11
0.025 mg.	11	..	10	11	..	9
0.05 mg.	12	..	15	14½	..	11
0.1 mg.	12	15	8	13½	9	11
0.5 mg.	17	19	10½	30	18	
1.0 mg. (partial)	45	Did not clot	Did not clot	Did not clot	Did not clot	20
2.0 mg.	Did not clot	Did not clot	Did not clot	Did not clot	Did not clot	Did not clot
2.5 mg.	Did not clot	Did not clot	Did not clot	Did not clot		
Thirty Minutes after Administration of Sodium Citrate (1 gm.)						
Plain blood; no citrate	3½	9	9	6¾		
0.005 mg.	3	..	7	7		
0.0075 mg.	3½	..	9	5		
0.01 mg.	3½	16	13	7		
0.025 mg.	3½	..	13	10		
0.05 mg.	3½	..	6	11		
0.1 mg.	3½	17	10	10		
0.5 mg.	3½	17	16	45		
1.0 mg.	30	Did not clot	Did not clot	Did not clot		
2.0 mg.	Did not clot	Did not clot	Did not clot	Did not clot		
2.5 mg.	Did not clot	Did not clot	Did not clot	Did not clot		

* The two readings of Patient 11795 were taken twenty-four hours apart, and after the first test, 1 gm. of sodium citrate was given as was done in each of the other cases.

RESULTS

Clotting Time.—Forty patients were studied. In all, the diagnosis of influenza was clear from the clinical manifestations. All occurred during the height of the epidemic. Some were in the second or third day of convalescence. The majority were studied between the third and sixth day of disease. The normal clotting time with the method used was definitely shorter than that of the patients. There seemed no relationship between degree of delay and severity of disease. Moreover, the delay was present even when secondary infections with pneumococci or hemolytic streptococci had occurred. It was as though the delay in clotting time represented an influence essentially associated with the intoxication of influenza, which persisted throughout the secondary pneumonia, and into convalescence.

Platelets.—The results are shown in Table 3. Counts were made in twenty-one cases. The reduction in the majority of the cases is very definite. As in the case of clotting time, the reduction of platelets was independent of the stage of the disease or of the presence of secondary infections. The reduction of platelets and the delay in clotting time occurred hand in hand. Both were apparently independent of the number of leukocytes present, as shown by Table 3.

Leukocytes.—In general, it may be said that influenza is attended by an absence of leukocytosis, often extending to a degree of leukopenia. The presence of leukocytosis is good evidence of the presence of secondary infection.

COMMENT

As pointed out by Weil,[3] intravenous injection of sodium citrate hastens clotting, although in the test tube the same salt in sufficient concentration will prevent clotting. Similar action is ascribed by Addis [4] to sodium phosphate. To determine whether the same response to sodium citrate could be obtained in patients with influenza, possibly affecting the condition thereby, five patients were studied as shown in Table 1. The effect of intravenous injection was prompt. In one case (11278), the character of the sputum markedly changed from one of bloody appearance to one almost free from blood. It was thought, in the beginning, that patients improved after such treatment; but further tests made such a conclusion doubtful. In patients with streptococcus empyema, a peculiar reaction usually followed the injection of citrate, which consisted in a sudden, though transitory, gasping for breath. In the test tube, the addition of sodium citrate seems to inhibit the hemolytic action of serum of such patients on a suspension of sheep red blood corpuscles. Accordingly, the explanation of this clinical reaction was not found.

In seeking an explanation for the peculiar effect of sodium citrate on clotting time in vivo, it was thought that the salt might rapidly diffuse after entering the blood stream and be diluted so that only a minute amount remained after a few minutes, and that such a minute quantity might enhance the condition of "thrombin" and "prothrombin." Accordingly, tests were made of four patients and two normal controls, in which minute amounts of citrate in vitro seemed to have the effect of shortening clotting time, while the usual concentration of 0.2 per cent. prevented clotting. Further investigation must be made to substantiate this finding, shown in Table 2.

TABLE 3.—COMPARISON OF LEUKOCYTE COUNT, PLATELET COUNT, CLOTTING TIME AND FRAGILITY OF RED BLOOD CORPUSCLES, IN INFLUENZA PATIENTS

Hospital Number	Leukocyte Count	Platelet Count	Fragility Test: Complete Hemolysis, % NaCl	Fragility Test: No Hemolysis, % NaCl	Clotting Time, Minutes
10953	14,000	70,000	0.300	0.550	7½
11133	.....	.....	0.250	0.500	7
11149	3,000	38,000	0.250	0.500	6
11174	9,500	45,000	0.250	0.475	7
11250	11,000	66,000	0.300	0.425	11
11278	8,000	85,000	0.200	0.350	5
11405	9,000	78,000	0.300	0.425	12
11406	6,000	114,000	0.250	0.425	6
11420	7,000	89,000	0.325	0.425	11
11424	2,000	28,000	0.250	0.550	4
11428	3,000	47,000	0.300	0.475	7
11458	6,000	64,000	0.250	0.425	10
11460	10,000	67,000	0.250	0.400	10
11487	3,200	76,000	0.250	0.475	6
11367	4,200	34,000	0.300	0.475	4
11538	20,000	220,000	0.300	0.425	5
11546	4,500	20,000	0.300	0.425	9
11153	40,000	60,000			
11566	2,000	52,000	0.350	0.475	8
11595	15,000	133,000	0.300	0.425	12
11596	18,000	66,000	0.300	0.425	14
D.	18,000	285,000	0.250	0.450	7
Normals					
H.	.....	.....	0.250	0.475	
B.	8,000	258,000	0.250	0.450	4½
G.	.....	.....	0.250	0.475	
K.	8,000	235,000	.....	.....	4½
A.	12,000	224,000	.....	.....	5
Miss A.	.....	.....	0.300	0.425	

1. Wright, J. H., and Kinnicutt, Roger: A New Method of Counting the Blood Platelets for Clinical Purposes, J. A. M. A. **56**: 1457 (May 20) 1911.

2. Hill, L. W.: The Resistance of the Red Blood Cells to Hypotonic Salt Solution in the Various Anemias, Arch. Int. Med. **16**: 809 (Nov.) 1915.

3. Weil, Richard: Sodium Citrate in the Transfusion of Blood, J. A. M. A. **64**: 425 (Jan. 30) 1915.

4. Addis Thomas: Proc. Soc. Exper. Biol. & Med. **14**: 1192, 1916.

SUMMARY

The clotting time of the blood of patients with influenza is delayed.

The number of platelets is reduced in such patients.

Neither of the foregoing conditions changes with the onset of secondary infection, although the number of leukocytes is usually greatly increased in secondary infection.

The fragility of the red cells is probably increased in influenza.

CAN THE TUBERCULOSIS TRANSMISSION RATE BE REDUCED?

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What are the possible avenues of tuberculosis transmission among individuals? Is it direct contact by the air route, though spray that is expelled by an act of coughing, or through dried sputum in public places? In answer to this question it may be said, that if the results of investigations of the influenza-pneumonia epidemic can be taken as a key to sputum-borne disease transmission, the transmission rate resultant from the distribution of tuberculosis by the air route among adults is of minor importance.[1] In the infant, however, another link may be added to this avenue of transmission: that of soiling the hands on a contaminated floor.

In contrast to direct contact, transmission may take place through several common routes by indirect contact: (*a*) through hand-to-mouth infection, the hands being soiled by contaminated inanimate objects, and (*b*) through inanimate object-to-mouth infection, the objects entering the mouth of the tuberculous as well as that of the nontuberculous. There are other ramifications in the routes of travel, but for the purpose of this paper the foregoing are the most important.

Here it might be said that our efforts to control the disease by the restriction of spitting and coughing have not given results that inspire a high degree of confidence. Should it be assumed that public spitting is a large factor in transmission, it is to be pointed out that this restrictive measure is of limited value because it is an attempt to deal with the individual. In this disease, as in all communicable diseases, a successful attack cannot be made through the individual—the animate—but must be made through the inanimate; or, as in insect-borne diseases, through insect destruction. It might be laid down as fundamental, from an epidemiologic standpoint, that the final solution in the eradication of any disease depends not on the control of the animate, but on the control of the inanimate through universal mass action.

On this basis there would be some encouragement in a plan of attack which could be universally applied to the most common *saliva*-contaminated inanimate objects. If this could be accomplished, the major avenue of transmission would be closed, the transmission rate would be immediately diminished, and on the basis of "the theory of case and source elimination" the majority of the tuberculous cases of the next human cycle of this organism would be eliminated as sources of infection. Likewise, by continuing this blocking in subsequent cycles of the organism, the majority of cases and sources would be eliminated. Thus, it is only by application of this principle through its cumulative action that the disease will be ultimately eradicated.

What is the most common inanimate object which becomes sputum contaminated by one person and then, without being rendered aseptic, enters the mouth of another where the saliva and its organisms are deposited? The donor of the saliva may be tuberculous and the recipient nontuberculous. This exchange of inanimate objects with their attached organisms takes place three times a day between tuberculous and nontuberculous persons. These objects are eating utensils. Objection might be made to the possibility of any such transfer of tubercle bacilli, on the assumption that only the sputum contains large numbers of organisms, while the saliva of the oral cavity is comparatively free from contamination by this organism; also that eating utensils are washed, and furthermore that such utensils when used by the tuberculous, who have had hospital training, are boiled.

The saliva in the open case contains many tubercle bacilli; dishes when washed only in warm water are not rendered aseptic—the average removal of organisms is about 70 per cent.;[2] and the tuberculous who have had the advantages of training in a sanatorium are in the minority.

TRANSMISSION EXPERIMENTS

The field and laboratory investigations on the transmission of measles-pneumonia at San Antonio, as well as those on influenza-pneumonia at the port of embarkation, Newport News, Va., and in public institutions presented a lead as to the most likely major avenue of tuberculosis transmission.[3] From these investigations it was deduced that direct contact through the air route played at best only a minor rôle in sputum-borne transmission, while indirect contact through hands and eating utensils was the major avenue of distribution.

The plan of the work was: (1) to determine the presence or absence of tubercle bacilli on eating utensils after they were used by tuberculous patients; (2) to determine the presence or absence of these organisms on eating utensils after these utensils were washed by the usual hand method in hot water; (3) to determine their presence on the hands of patients, and (4) to determine their presence in the air of tuberculosis wards.

In carrying out these researches it was recognized, from the standpoint of tuberculosis transmission, that of all eating utensils, the spoon would be the most likely transmitting object. This is because the spoon actually enters the mouth; the fork does, too, but of the two the spoon has the larger surface area to which mouth organisms may adhere. The spoon was, therefore, chosen as the transmitting agent in these experiments.

Spoon Wash Water.—In the first group of experiments, which were undertaken, May 1, 1919, the spoons used in two open cases of tuberculosis were washed after each meal with a cloth in 150 c.c. of hot water. About 50 c.c. of this wash water were centrifugated, and the centrifugate of eleven of these specimens was

1. Cumming, J. G., and Spruit, C. B.: Transmission of the Pneumonia Group of Organisms, to be published.

2. Observations as yet unpublished.

3. Lynch, Charles, and Cumming, J. G.: The Distribution of Influenza by Indirect Contact—Hands and Eating Utensils, Am. J. Pub. Health **9**: 25 (Jan.) 1919.

injected subcutaneously into guinea-pigs. Of these eleven guinea-pigs, three died from generalized tuberculosis.

In the next group of experiments the procedure was the same except that a single spoon was used instead of two as in the previous experiments. Among twenty guinea-pigs so inoculated, eight died from tuberculosis. Of the thirty-one injected animals in this group, eleven, or 35 per cent., died from tuberculous infection.

Spoon Rinse Water.—In these experiments, spoons were first washed by hand in hot water. They were then placed in a large mouth bottle containing 50 c.c. of hot water and shaken for five minutes. This rinse water was then centrifugated and the centrifugate injected. Twelve guinea-pigs were injected with the pooled rinse water centrifugate from the spoons used in two cases of open tuberculosis. The same two patients were rarely used in successive experiments. Of the twelve animals so injected, three died from tuberculosis. Of twenty-four guinea-pigs injected with the rinse waters from single spoons, six died from tuberculosis.

Of the thirty-six injected animals in this group of experiments, nine, or 25 per cent., died from tuberculous infection.

Hand Scrapings.—The hand scrapings from tuberculous patients were obtained by first soaking the hands in warm water for a few minutes and then scraping off the epithelium with a scalpel. Of seven animals injected with the scrapings so collected, three, or 43 per cent., died from tuberculosis.

RESULTS OF INJECTIONS IN GUINEA-PIGS

Injections	Number Injected	Number Dead	Dead from Tuberculosis	
			Number	Per Cent.
Wash water	31	21	11	35
Rinse water	36	22	9	25
Hand scraping	7	4	3	43
Air washing	11	1	0	0

Air Washings.—The specimens of air dust were obtained by drawing air through water by means of a suction pump. The inlet was 3 feet from the floor, the washing process was in each test continued throughout a twenty-four hour period, and there was a total of 17,280 liters of air washed. About 50 c.c. of the 150 c.c. of water used for each twenty-four hour run were centrifugated, and the deposits of eleven of these specimens were injected into guinea-pigs. During an observation period of nine weeks, only one of the injected animals had died; its death, however, was not due to tuberculosis.

COMMENT

Since tuberculous sputum passes through the oral cavity on its way from the lungs of the tuberculous to the exterior, this cavity becomes contaminated. Objects that enter the mouths of these patients become contaminated with the specific organism. As eating utensils are the most frequent inanimate objects which come in contact with the mouth, it is to be expected that guinea-pigs injected with the wash water from eating utensils of the tuberculous patient would die from tuberculosis. It will be noted that 35 per cent. of animals so injected died from the infection.

But the outstanding feature of this series of experiments is that the percentage of deaths, 25, from the rinse water injections was almost as great as that from the wash water injections. It is believed that the hand washing of the spoons in this series of experiments can be taken as representative of the usual method of washing eating utensils. If this is so, the difference in the percentage of deaths between the animals injected with washings and rinsings indicates that only about 30 per cent. of the spoons used by tuberculous patients are rendered free from the organism by the usual hand method of washing.

This group of rinse water injections, with its 25 per cent. mortality, demonstrates the facility of tuberculosis transmission and indicates that in families the eating utensil is the *major* avenue of distribution.

Imagine a family of six in which there is one open case of tuberculosis. What are the chances of introducing tubercle bacilli from the patient in this open case through the spoon route into the mouths of the remaining five members of the family? I do not wish to convey the idea that only the spoon is responsible for transmission; but among all eating utensils, it is the chief conveyer. Since there are six persons in the family, the chances are five to one that at each meal the contaminated spoon is used by one of the well members of the family. But there are three meals a day, and of all eating utensils there are three which actually come in contact with the mouth or lips: the spoon, fork, and cup. As there are three contaminated conveyers, three meals a day, and six persons in the family, the chances are that each well person during the day uses approximately two conveyers contaminated by the tuberculous person. These chances of exchange increase with a decrease and decrease with an increase in the number composing the family.

In view of this exchange of eating utensils in a family group, and in view of the fact that the majority of eating utensils are hand washed, by which method they are neither freed from all organisms nor rendered aseptic, and in addition, that the eating utensil is the most common inanimate object which enters the mouth of the tuberculous as well as that of the nontuberculous, is it not obvious that the eating utensil is the major avenue of tuberculosis transmission?

The primary infection, then, is not the result of airborne transmission, nor is it in the lung as is generally maintained; but it is saliva-borne and in lymphoid tissue. The primary focus might be either in the tonsil or in a mesenteric lymph node. From these primary foci, tubercle bacilli are subsequently passed into the lymph channels and thence to the blood stream. Since the first network of small vessels through which the blood passes is in the lung, the organisms are filtered out, just as in hookworm infection, and here their multiplication produces a secondary focus. In the lung, the evidence indicates that extension again takes place through lymph channels, resulting in multiple foci. From an epidemiologic standpoint the breaking down of these multiple foci, the liberation of tubercle bacilli, the contamination of saliva, the soiling of eating utensils by saliva, and the use of these without being rendered aseptic by boiling water, results in the introduction of repeated small doses, one or more of which are finally carried through the barrier and involve lymphoid tissue of the newly infected person; thus there is completed the cycle of transmission. It is not the large dose of tubercle bacilli that is usually responsible for infection, but it is the repeated small doses.

Although the hand scraping injections gave the highest mortality among the several groups of injected

animals, it is not to be concluded from this result that the hand-to-mouth route of travel is the most frequent mode of tuberculosis transmission. The hands of the tuberculous are contaminated with tubercle bacilli, but our hands only handle objects in common with those of others, and do not enter the mouths of other persons as do eating utensils. The hands are dry, which makes transfer to objects difficult. In addition there is a five-link chain in hand-to-mouth transmission, while through eating utensils there is only a three-link chain, and the two end links are moistened by the saliva which makes for facility of transmission. From a general consideration of tuberculosis transmission it appears that hand-to-mouth spread is second in importance to eating utensil distribution.

None of the animals injected from air washings died from tuberculosis, and although these animals were under observation for only nine weeks there were no indications of infection—no nodules at the point of injection. This result, in conjunction with our reports of former research [1] on the air dust of streptococcus wards, where it was found that hemolytic streptococci were practically never found, might well lead one to conclude that the air route of travel of the tubercle bacillus, as well as that of the hemolytic streptococcus, is a remote possibility. It might be well to consider that there is an exception to this in the creeping infant. In this case, the first link in the chain is from the adult through the air, directly to the floor, and thence to the infant by the hand-to-mouth route. But this is indirect contact and not direct contact transmission, nor is it the major avenue of distribution among persons.

It might be well to add here that there is no disease which man will not be able to control; and so long as he regards any disease or group of diseases as transmitted by the air route, successful control is impossible. In general, we have little or no control over the air that we breathe; consequently we have little or no control over this as a transmitting avenue. This is not so in the case of inanimate objects, through which the major avenue of transmission can be readily closed.

The findings here presented in no way influence the teaching that promiscuous spitting and careless coughing should be heartily discouraged, not only from the standpoint of common decency, but also from that of disease prevention.

CONCLUSIONS

1. The attack against tuberculosis has not resulted in a marked reduction in the transmission rate, because this attack has been made chiefly against the minor avenues of distribution.

2. A communicable disease can be successfully controlled and eventually eradicated only by an attack against the major avenue of spread.

3. The group of rinse water transmission experiments here presented gives a high mortality from tuberculosis and affords striking evidence of the importance of indirect contact transmission in this disease.

4. The results of the rinse water experiments, in conjunction with epidemiologic information, indicate that the major avenue of tuberculosis transmission is through eating utensils.

5. Eating utensil transmission is a three-link chain; the two end links are moist, and this makes for facility of transmision.

6. On the basis of "the theory of case and source elimination," by making the attack through the major avenue of transmission, tuberculosis is as controllable as is typhoid fever.

7. It should not be assumed that we should learn to live with tuberculosis, but rather that we should learn how to reduce the transmission rate.

8. Just as a 99 per cent. removal of organisms from a polluted water supply controlled the intestine-borne infections, so, likewise, will a similar reduction of organisms on eating utensils control the saliva-borne infections.

9. The universal application of the principle of eating utensil asepsis will accomplish more in the control of tuberculosis than will any other single measure of practical application.

10. In the control of tuberculosis, the adoption of the principle of using boiling water as a cleansing and a pasteurizing agent of eating utensils applies especially to the small messing group—the family—and also, but to a less extent, to the public eating place.

TYPHOID FEVER IN THE AMERICAN EXPEDITIONARY FORCES

A CLINICAL STUDY OF THREE HUNDRED AND SEVENTY-THREE CASES *

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DETROIT

This clinical study of typhoid fever as it occurred in France among the troops of the American Expeditionary Forces has been made under the direction of Col. J. F. Siler, chief of the Division of Laboratories and Infectious Diseases, Office of the Chief Surgeon, A. E. F. It is based on a personal investigation of the cases of typhoid fever, of paratyphoid, and of clinical typhoid as they occurred in the various army hospitals, supplemented by a statistical study of detailed reports on 373 cases.

As a result of the system employed at the ports of embarkation in the United States, nearly all soldiers leaving for France received preventive typhoid inoculations prior to leaving this country. A study of this disease as it occurred in France becomes, then, a study of typhoid fever in the "immunized" individual. The aim of this investigation has therefore been to determine the clinical difference, if any, between typhoid fever in the vaccinated and in the nonvaccinated, and the effect of vaccination on the course of the disease as well as on the severity and the mortality. Investigations from the point of view of laboratory work and epidemiology have been touched on only as they affect the clinical aspects of the disease.

INCIDENCE

Chart 1, prepared from weekly reports of the sick and wounded to the Surgeon General's Office, shows that the typhoid group of diseases had been present in isolated cases since the autumn of 1917. The rise in the curve for November, 1917, while nearly as high as for that of December, 1918, must not be understood to indicate as great a number of cases. Showing, as it does, the annual death rate per thousand for each week, the curve for November, 1917, is based on a very much smaller total number of men in the American

* Because of its length, this article is published in two parts. The second part will appear next week.

† Dr. Vaughan died, June 4, 1919, at St. Aignan-sur-Cher, France.

Expeditionary Forces than for the fall of 1918. The pronounced rise in the curve for August, 1918, was due in great part to disease at the front. With the men in action and forced at times to drink from polluted streams and rivers, to drink even from the water lying stagnant in the shell holes, it is but natural that the incidence of enteric diseases should take an upward jump. The effect of this is shown in the curve for dysentery in the same chart.

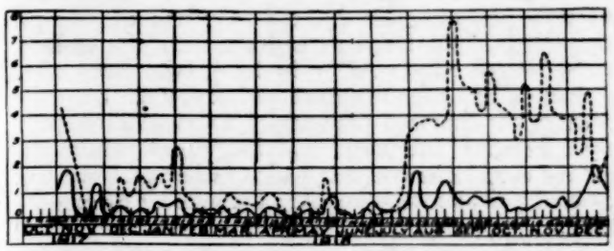


Chart 1.—Morbidity among troops in expeditionary forces during 1917-1918; annual rate per thousand: solid line, typhoid and paratyphoid; broken line, dysentery.

Since the armistice there have been two or three small epidemics of typhoid fever. In December, 1918, there was a rise in the incidence of the disease in the Seventy-Seventh and Seventy-Ninth Divisions which continued for more than three months. Investigation showed that in the Seventy-Ninth Division typhoid infection had occurred while the troops were in action in the Argonne, since which time it had been endemic, the source of infection being apparently healthy or convalescent carriers.[1] We had no opportunity in connection with our studies of investigating the infection in the Seventy-Seventh Division, but presumably the etiology was the same.

In March, 1919, a small outbreak occurred among the troops stationed in the vicinity of Marseilles. Here the disease originated from two sources: (1) polluted water at times improperly chlorinated, and (2) carriers and typhoid cases passing through the camp, especially from combat troops and other organizations previously stationed in infected areas in the former zone of the advance.

Cases providing material for this paper date from Jan. 1, 1919.

TYPHOID FEVER

This paper will be divided into a consideration of straight typhoid fever and of the two paratyphoids, A and B, and of so-called clinical typhoid fever, a condition in which the clinical findings were quite characteristic of the disease but in which the causative organism was not isolated. No case has been accepted for our statistical study as being undoubted typhoid or paratyphoid fever unless the causative organism has been isolated either from the urine or feces or preferably from the blood. I recognize that the finding of the typhoid or a paratyphoid bacillus in the feces alone does not establish a diagnosis, but have assumed that this finding, together with the presence of characteristic clinical symptoms of the disease, and with negative blood cultures, form sufficient evidence on which to base a diagnosis.

The clinical and laboratory findings in 270 cases infected with *Bacillus typhosus* form the basis for this portion of our report.

1. Vaughan, V. C., Jr.: Report on Typhoid Fever in the Seventy-Ninth Division.

Blood Cultures.—In summarizing the results of the blood examinations, I here include for convenience the results in the paratyphoid cases. Of 331 cases studied with a view to isolating the causative organism, blood cultures were made in 274. In the remaining fifty-seven, no blood cultures were made, but diagnosis rested on the isolation of *B. typhosus* or *paratyphosus* from the stool or urine. Of these 274 cases, 180 were positive and ninety-four negative for the organisms in question. These results, representing cultures taken at all stages of the disease, show that the organism was isolated from the blood in 65.7 per cent. of cases of true typhoid and paratyphoid fevers (Chart 2).

Table 1 gives the actual number of cultures taken in each case. The fact that in one case of proved typhoid six blood cultures were negative illustrates the value at times of taking cultures of the excreta.

In Chart 3, which gives the actual number of positive and negative blood cultures on successive days of the disease, the greatest number of positive cultures is recorded between the tenth and the fourteenth days of the disease. This is because the greatest number of cultures were also taken during that period. At the end of the first week of the disease and at the time when rose spots were appearing and the spleen was becoming palpable, typhoid was suspected and blood cultures were first made. The average date of diagnosis was the eleventh day of the disease. Chart 4 gives the same information as that given in Chart 3, on a percentage basis. It shows that during the first week of typhoid fever the organism was isolated from the blood in 65.7 per cent. of trials, and during the second week in 54.7 per cent. During the third and fourth weeks, blood cultures were positive, but in diminished frequency. (Relapses shown in Chart 3 are not included in Chart 4. It is possible that some of the other positive blood cultures obtained late (Chart 4) were also in relapse, although not reported as such.)

TABLE 1.—BLOOD CULTURES IN CASES OF PROVED TYPHOID AND PARATYPHOID FEVERS

No. of Cultures per Case	Total	Positive	Negative
Cultures taken once	203	143	60
Cultures taken twice	48	25	23
Cultures taken three times	10	3	7
Cultures taken four times	12	9	3
Cultures taken six times	1	0	1
Total	274	180	94

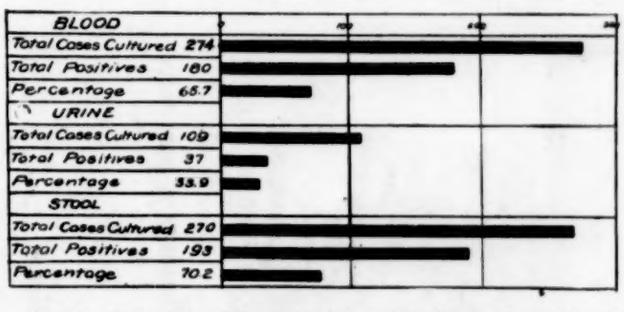


Chart 2.—Percentage of cases showing positive blood, urine and stool cultures in proved typhoid and paratyphoid.

Urine and Feces.—Of 109 cases in which urine cultures were made, thirty-seven, or 33.9 per cent., gave positive results. Of 270 in which cultures of the stools were taken, 193, or 70.2 per cent., were positive for *B. typhosus* or one of the paratyphoid organisms (see

Chart 2). In Chart 5 it is seen that urine cultures were most frequently positive during the second and third weeks of the disease, and that stool cultures were positive in as high as 57 per cent. of cases in the first week, from which high point the percentage gradually

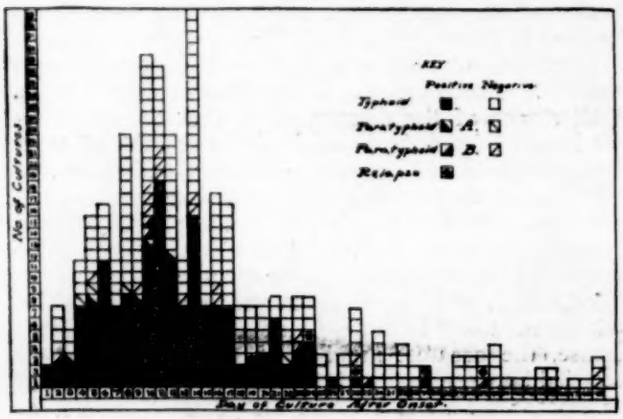


Chart 3.—Actual number of positive and negative blood cultures in proved cases of typhoid and paratyphoid by days after onset of disease.

decreased so that by the sixth week they were positive in only 9 per cent. Figures for later weeks both in the urine and the feces curves, are based on smaller numbers of cultures and are therefore less reliable.

Simultaneous blood and feces cultures made in 150 instances in successive weeks of the disease (Chart 6) showed that during the first week the likelihood of making positive diagnosis by stool culture was two thirds as great as by blood culture, whereas in the second week the chances were about even, the advantage still resting slightly with the blood method. During the third week the opportunities for obtaining the organism were somewhat better by the stool examination. After the third week the possibility of obtaining the organism decreased by both methods, the stool method remaining the better. In fifty out of the 150 cases, urine cultures were also made. Perhaps the most important fact to be brought out in this analysis is the persistence of positive blood cultures into the third week in a certain proportion of cases.

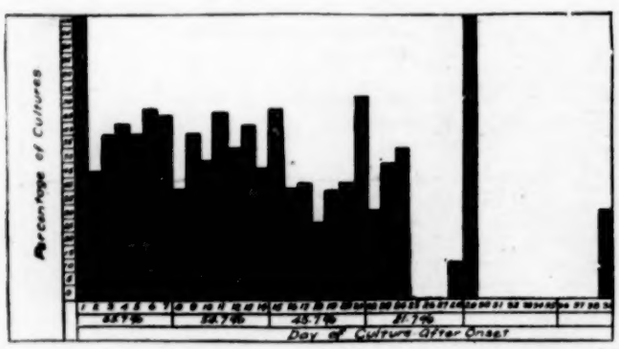


Chart 4.—Percentage of positive blood cultures in cases of proved typhoid and paratyphoid by days after onset of disease.

Serodiagnosis.—Serodiagnosis, particularly by the use of the Widal reaction, has not been relied on in the diagnosis of these infections. In individuals inoculated with the triple vaccine the Widal as usually performed is valueless.[2] The well known tendency of the paratyphoid B bacillus to be agglutinated in much higher dilutions than *B. typhosus* and particularly than the paratyphoid A bacillus, together with the presence of group agglutinins or coagglutinins, further tends to vitiate the results. Antibody titration by the Dreyer method promises better results in the vaccinated, but time and equipment did not permit its use in this clinical study.

2. Rist, E.: J. Lab. & Clin. Med. 3:1 (Oct.) 1917.

SYMPTOMATOLOGY

Antityphoid inoculation as an auxiliary to sanitary measures has diminished the occurrence of typhoid fever but has not freed us entirely from the disease. In the United States Army in 1914, two years after vaccination had been made compulsory, there occurred 7.5 cases per hundred thousand. Vaccination confers only a relative immunity, and in France, where the sanitary conditions could not always be ideal, we had expected a moderate increase in the number of cases.

We had been led, however, to expect that the clinical condition encountered in the inoculated would be quite different from that in the nonvaccinated. Gay,[3] in quoting foreign workers, remarks that the mortality among the vaccinated, as compared with the nonvaccinated, decreases even more rapidly than does the morbidity. He says: "Not only is the mortality rate decreased, but the disease itself is found to undergo a very distinct modification when it does occur in the vaccinated. It has frequently been found to be so mild as to offer great difficulty in its classification."

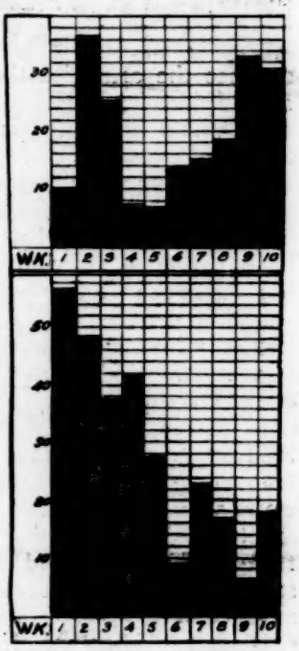


Chart 5.—Above, percentage of positive urine, cultures in successive weeks of the disease in 109 cases of proved typhoid; below, percentage of positive feces cultures in successive weeks of the disease in 270 cases of proved typhoid.

We have analyzed the clinical symptomatology in 270 cases of proved typhoid fever, in all of which the patients had been vaccinated previously. The result of our analyses are given in Chart 7, on which are shown the incidence and average day of appearance of the symptoms and the more frequent complications. The ordinates represent the total percentage of cases in which any one symptom was observed, while the abscissas indicate the average day of the disease on which each symptom was noted. Thus, one may read that diarrhea occurred in 45 per cent. of the cases and that the average day of appearance was the fourth day; or that rose spots were noted in 62 per cent. of the cases, usually first recognized on the twelfth day. From this chart, then, the entire clinical symptomatology may be reconstructed.

The most striking feature of the disease in the inoculated, as here graphically shown, is its almost classical resemblance to the old typhoid as we knew it in the unvaccinated. The chill in nearly one fourth, the early bronchitis in well up toward one half, the initial constipation in about one fifth of the cases, followed in a few days by diarrhea in one half, meteorism, rose

3. Gay, F. P.: Typhoid Fever Considered as a Problem of Scientific Medicine, New York, the Macmillan Company, 1918.

spots and enlarged spleen in the second week, complications in the third week, and cessation of the fever averaging around the end of the fourth, form a clinical picture in no wise differing from that of typhoid in prevaccination days.

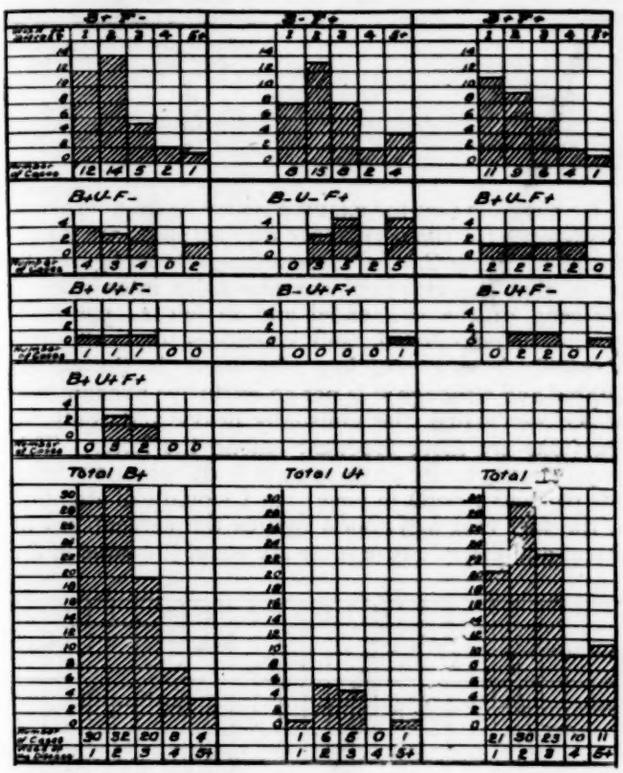


Chart 6.—Comparison of simultaneous blood, urine and feces cultural results, by weeks of disease, in 150 cases of proved typhoid.

Not only was this resemblance true on paper, but it was likewise true at the bedside. In the majority of the cases in which the typhoid bacillus was isolated there was no difficulty in the clinical diagnosis. Typhoid facies, coated tongue, rose spots, palpable spleen, rigid, slightly tender abdomen and dicrotic pulse were the rule rather than the exception. Just as in the uninoculated, all gradations of the disease were found. We have long been acquainted with the mild and ambulatory cases, difficult of diagnosis because of the mildness and frequent absence of many of the symptoms. Many such have probably occurred among our troops and remained undiagnosed. It is further possible that the number of cases that would fall into this class has been greatly increased by preventive inoculation. But of those numerous patients whom we have seen sick in hospital, there could be no doubt as to the clinical diagnosis.

Leukopenia.—White blood counts failed to detect a leukocytosis. On the other hand, the leukopenia was not so marked as it is described in the classical typhoid (Charts 8 and 9). The average white counts on successive days of the disease stood around 7,000. Some were higher and some were lower, but not a few are reported of from 2,000 to 4,000 per cubic millimeter. Realizing that our reports were being received from seventeen different laboratories and that the high counts might be due to variations in technic, we grouped all the reports from a single hospital in which cases of typhoid fever were unusually frequent. Here the average white counts on different days of the disease, as compared with the average for all hospitals, was lower, but not remarkably so (Chart 10).

In uncomplicated typhoid the white count averaged around 7,000. This figure agrees with that reported by Hawn, Hopkins and Meader.[4] Whether this is due to a change resultant on vaccination or to other causes, it is hard to state. The presence of several real instances of ieukopenia prove the possibility of such occurring in the antityphoid inoculated. The average white count during hemorrhage was 4,500; in perforaton, 6,000; in lobar pneumonia complicating the disease, 12,000, and in bronchopneumonia, 9,000. These, again, are figures that agree with those for typhoid in the unvaccinated.

Fever.—Chart 11 shows the case of a man in hospital with an acute febrile disturbance who in the second week had the onset of a typical typhoid fever with steplike rise in the fever curve and a slow pulse; the fastigium starting in the second week of the disease, becoming definite in the third and fourth with increased rapidity of the pulse, and followed in the fifth week by lysis. In Chart 12 *B* is seen again the steplike rise and the tendency to a continued high fever during the

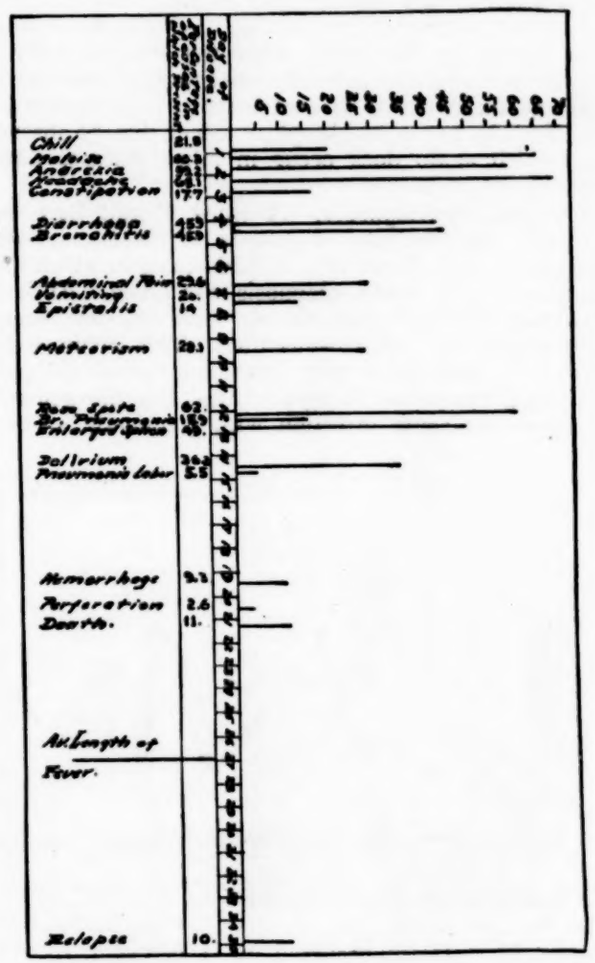


Chart 7.—Incidence and average day of appearance of symptoms and frequent complications in 270 cases of proved typhoid.

succeeding ten days. *C*, on the same chart, begun during the fastigium, shows that period and the following decline by lysis. Chart 13 *G* and *I* show relapses following rather mild initial courses.

4. Hawn, C. B.; Hopkins, J. D., and Meader, F. M.: Outbreak of Typhoid Fever Among American Troops in England, J. A. M. A. **72**: 402 (Feb. 8) 1919.

The type of fever in vaccinated typhoid patients did not differ remarkably from that in the unvaccinated. The average day of cessation of fever was 26.9. Relapses occurred in 10 per cent. of the cases, and the average date of onset was the thirty-fifth.

Atropin Test.—This was performed in a small number of cases, and was usually found to be positive (no pulse increase over 20 beats a minute after 2 mg. of atropin subcutaneously). This was particularly the

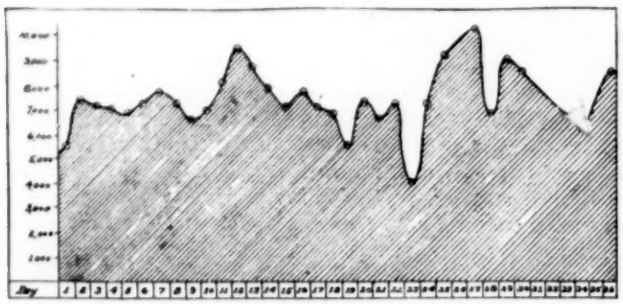


Chart 8.—Average white blood counts in "uncomplicated" cases of proved typhoid arranged according to day of disease.

case during the first week, when the pulse was slow. It was often negative after the pulse rate had increased. We regard this test as of confirmatory value similar to such findings as a palpable spleen, which may be absent, and which again does occur in other diseases than typhoid.

Preliminary Diagnoses.—A word should here be given to the admission diagnoses of these cases of proved typhoid (Chart 14). Of 206 cases in which the entrance or provisional diagnosis was noted, 120 bore a diagnosis of respiratory disease, while only forty-nine were diagnosed as gastro-intestinal. This, again, is in accordance with our previous knowledge of the disease, the initial symptoms being not local but the general symptoms of acute infection with frequently a concomitant bronchitis.

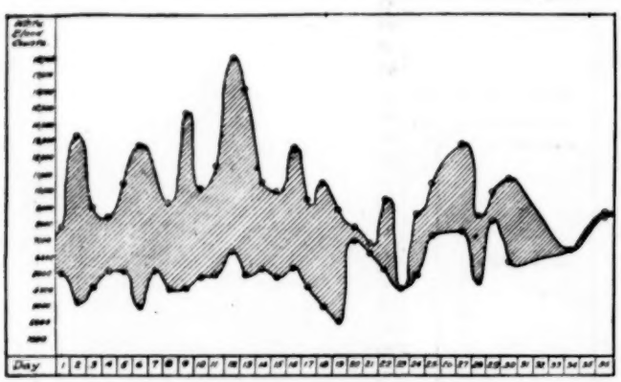


Chart 9.—Maximum and minimum blood counts in "uncomplicated" cases of proved typhoid arranged according to day of disease.

Mortality.—Death occurred in 11 per cent. of the 270 cases studied, and the average day of death was the twenty-first.

LITERATURE

The foregoing clinical findings in typhoid fever are in accord with the observations of others. Labbé [5] remarks:

> The symptomatology has nothing characteristic. The same elements are present as among the unvaccinated, and they appear in the same order. The onset is not marked by special symptoms. . . . During the fastigium the diarrhea is neither more nor less frequent. . . . At most, one could say that the abundant diarrheas are a little less frequent among the vaccinated.

TABLE 2.—OCCURRENCE OF ROSE SPOTS

Nature of Eruption	Vaccinated, per Cent.	Nonvaccinated, per Cent.
Absent	6	10
Discrete	18	15
Average	40	53
Heavy	28	13
Very profuse	8	9

He suggests that the exanthem may be more profuse. His figures for the occurrence of rose spots are reproduced in Table 2. In summarizing these figures he states that the eruption was unusually intense in 36 per cent. of the vaccinated and in but 22 per cent. of the nonvaccinated, and concludes that although unusually intense eruptions also occur in the unvaccinated and although it is not an exclusive phenomenon of the vaccinated, the unusually heavy and confluent eruptions are more frequent among the latter. This may be true, as we have not made examinations with this particular point in view; but I would call attention to the fact that in Labbé's figures the percentages of absent and discrete rose spots are about the same in the

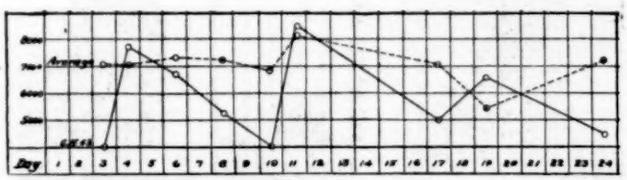


Chart 10.—Comparison of average white blood counts for entire series with average blood counts reported from Camp Hospital 53.

two columns, as are also the percentages for the very profuse. The difference occurs in the two intermediate stages. It is frequently difficult to distinguish between two gradations so close together. Were the variations farther separated in the columns, the evidence would be more convincing.

Labbé, in discussing the rose spots, also states that they are frequently quite persistent, lasting as long as fifteen or twenty days. They may occur as early as the fourth day. Blood cultures in his experience are negative after the fourteenth day, although in the nonvaccinated they may be positive as late as the twenty-eighth. He further asserts that the febrile period is notably shortened in the vaccinated. Patients during the pyrexia are fully as sick and as toxic as are the unvaccinated; but instead of three or four weeks of fever, there are usually only two or three. After the defervescence there is no subsequent rise, but the gastro-intestinal symptoms persist. Relapse is decreased in frequency from 10 per cent. in the nonvaccinated to 3.5 in the inoculated. In the mortality he reports the greatest results. A death rate of 21.4 per cent. among the nonvaccinated is decreased to 2.4 per cent. among those who have received two or more injections.

How are we to reconcile these reports with our findings of a febrile period averaging twenty-seven days, positive blood cultures into the fourth week, 10 per cent. of relapses, and a mortality of 11 per cent.? It is true that we have many cases with short febrile period, but the figures clearly show that for these short cases

5. Labbé, Marcel: Ann. de méd. **3**: 13, 1916.

we had a similar number with long duration, and that the average was as in the nonvaccinated. A positive blood culture is an absolute finding, whereas a negative culture proves nothing. I can only state that we had positive cultures after the second week. Our true mortality may well be under 11 per cent. I assume that to be too high rather than too low. Practically all severe cases of typhoid, especially in those who died, must have been recognized as such, whereas in hospi-

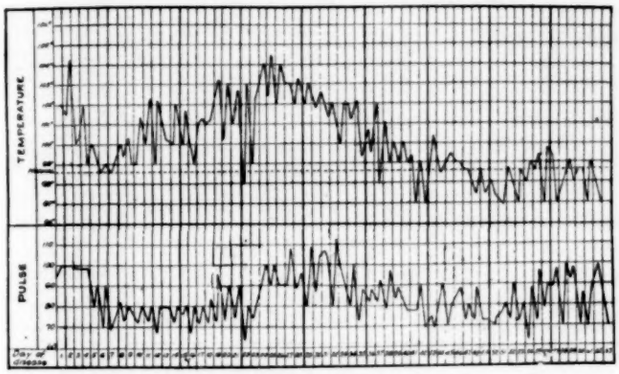


Chart 11.—Pulse and temperature in acute febrile disturbance; onset of typical typhoid in second week.

tals where there was no epidemic many lighter cases probably remained undiagnosed. Our true mortality was presumably below 11 per cent., but there is a wide interval between that figure and the 2.4 per cent. of Labbé, which requires further interpretation.

The reason for this discrepancy between figures is recognized as a possibility by Labbé. His report comprises a study of 154 individuals who had received from one to four inoculations of antityphoid vaccine. Practically none had received triple vaccine. Immunized against *Bacillus typhosus,* these men had become infected with one of the two paratyphoid organisms. Among these only fifteen were infected with the organism against which they were inoculated, and among them the mortality was 26.6 per cent., more than twice as high as our own mortality. These fifteen were diagnosed by positive blood cultures. The well known lower mortality in the paratyphoid infections has lowered Labbé's total mortality figures.

The clinical symptomatology among French troops, as described by Bernard and Paraf,[6] unlike that of Labbé, is definitely divided into that of straight typhoid infection and of paratyphoid. Concerning the former, they remark:

> Typhoid fever (among the vaccinated) has no peculiar characteristics which might indicate a modification of the disease resultant on a modification of the soil. The different classical forms are found with their usual characteristics. The mild forms present the usual appearance and evolution; few symptoms; no typhoid mental state; duration ten to fifteen days without complication, and simple convalescence. The moderately severe forms, common here as always, are the most frequent. They show nothing special, either in appearance of the symptoms, in the temperature curve, or in the progress or length of the disease. We remark that in four cases we found an unusually abundant eruption of rose spots and in one a total absence thereof. . . . The more serious cases showed meteorism, a thick, dry tongue, and lessening of the heart sounds, as they are among the nonvaccinated. It is worth while, however, to mention the extreme rarity of the serious complications.

6. Bernard and Paraf: Ann. de méd. **2**: 443, 1914.

The mortality in the twenty-six cases studied by these authors was 0 per cent., and the average severity (severe and fatal cases) was 26.9 per cent., as contrasted with 37.5 per cent. severity among the nonvaccinated. There is in their series a diminution in the gravity of the disease.

Campani and Gallotti,[7] working on the Italian front, found in a study of 144 nonvaccinated civilians and 341 vaccinated typhoid and paratyphoid soldiers that the mortality in the vaccinated straight typhoid patients was 8.6 per cent. and in the paratyphoid A and B, 4.6 and 7.8 per cent., respectively, as compared with 20 per cent., 0 and 0 per cent. in the unvaccinated. They found that in both groups about 42 per cent. of the patients had febrile periods lasting into the fourth week, and that the average duration of fever was, in the soldiers, 24.5 days, and among the civilians, 28 days. They state that the febrile curve, instead of being irregular and low in the vaccinated, was high and decidedly more regular than among the nonvaccinated, and that relapse occurred more frequently among the former. Splenomegaly and nervous phenomena were more frequent among the vaccinated. They conclude that vaccination has lessened both the mortality and the severity of the disease.

Bourges [8] reports in detail the case histories of five vaccinated men infected with *B. typhosus,* all of whom recovered. The descriptions are those of cases of classical typhoid.

Freund,[9] reporting typhoid infection in the German army, concludes that among the vaccinated there are more remissions and intermissions, and a greater proportion of mild cases. The fever is milder, but the total duration of the disease is not shortened. There is no change in the frequency of complications or relapses resultant on vaccination. The mortality among the vaccinated is given by him as 8.3 per cent.

Hawn, Hopkins and Meader,[4] describing thirty-eight cases studied in an outbreak among American troops

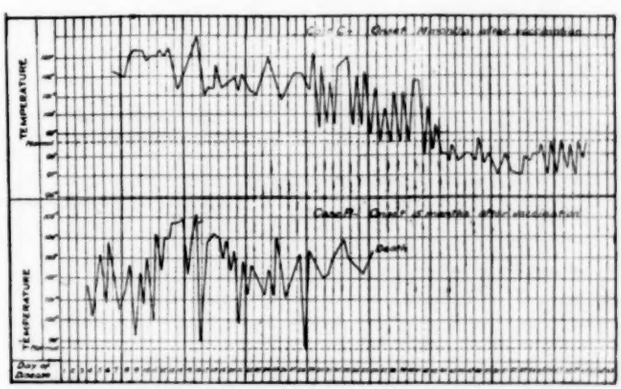


Chart 12.—Temperature in two cases.

in England, found clinical signs similar to our own. They described initial chills in 16 per cent., diarrhea in 58 per cent., constipation in 21 per cent., abdominal pain in 6 per cent., and epistaxis in 2.6 per cent. Among their thirty-eight cases rose spots were described in nineteen, palpable spleen in fifteen, and abdominal distention in nine. The average white counts ranged around 7,000 or less, and blood cultures were positive in twelve cases. The average duration

7. Campani, A., and Gallotti, A.: Gior. di med. mil. **66**: 614, 1918.
8. Bourges, H.: Arch. de méd. et pharm. nav. **105**: 224, 1918.
9. Freund, Ernst: Wien. klin. Wchnschr. **29**: 1232, 1916.

of the fever was thirty-five days, and the mortality in their series was 13.15 per cent. These findings among American troops in England corroborate ours for those in France.

Finally, the mortality for all troops in the American Expeditionary Forces from straight typhoid, between July 1, 1918, and May 31, 1919, was, for 1,242 cases, 13 per cent.

MORTALITY

Numerous observers have reported mortality results in the vaccinated. In Table 3 are given records of true typhoid in individuals immunized against *B. typhosus*.

It follows from a perusal of these varied results that

TABLE 3.—TYPHOID MORTALITIES IN THE VACCINATED

	Cases	Inoculations	Mortality, per Cent.
Bernard and Paraf	26	.....	0.0
Hunermann*	....	4	2.6
Hunermann	....	2	6.6
Crossonini†	28	3	7.1
Crossonini†	50	1–2	8.0
Campani and Galbotti	....	.....	8.6
Hawn, Hopkins and Meader	38	.....	13.1
Bonnel‡	15	3–4	13.3
Vaughan	270	.....	11.0
Total A. E. F., 11 months (as above)	1,242	.....	13.0
H. Bourges	5	.....	0.0
Freund	....	.....	8.3

* Hunermann: Verhandl. d. deutsch. Kong. f. innere Med., 1916, p. 192.
† Crossonini, E.: Sperimentale **71**: 191, 1917.
‡ Bonnel, F.: Areh. de med. et pharm. mil. **65**: 687, 1916.

the final determination of the mortality in inoculated typhoid patients is yet to be made. Many of the figures quoted above are much lower than our own, and yet the average is not lower than the mortality of 7.6 per

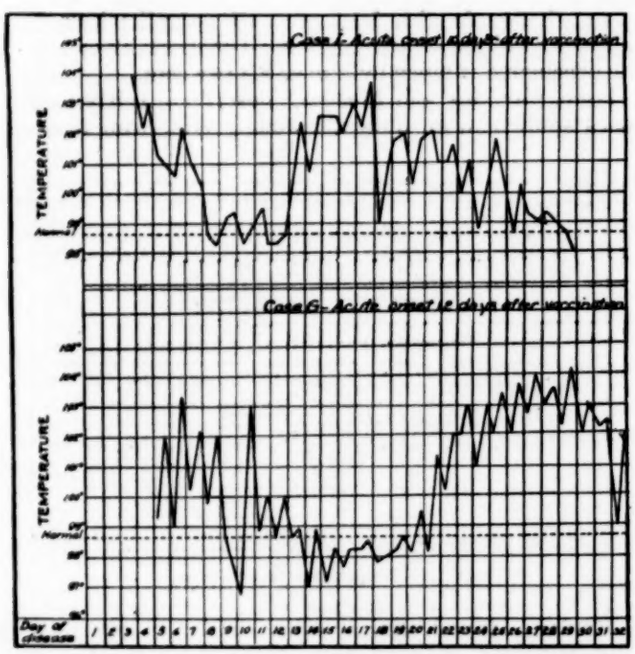

Case 1. Acute onset 8 days after vaccination
Case 6. Acute onset 12 days after vaccination
TEMPERATURE
Normal
Day of disease

Chart 13.—Temperature in two cases with relapses following rather mild initial courses.

cent. among 20,000 men as reported by Reed, Vaughan and Shakespeare [10] in the Spanish American War, or of that of 9.1 per cent. in 1,500 unvaccinated patients treated under Osler.[11]

10. Reed, W.; Vaughan, V. C., and Shakespeare, E. O.: Report on Origin and Spread of Typhoid Fever in U. S. Military Camps During the Spanish War of 1898.
11. Osler, Sir William: The Principles and Practice of Medicine, New York, D. Appleton & Co., 1918.

The various and varying factors that influence the death rate in disease, and particularly in a disease like typhoid fever, can never be mathematically eliminated, and can be rendered negligible only when the mortality figures from all sources have become so great that they include numerous cases touched by every one of these factors and by all of their variations.

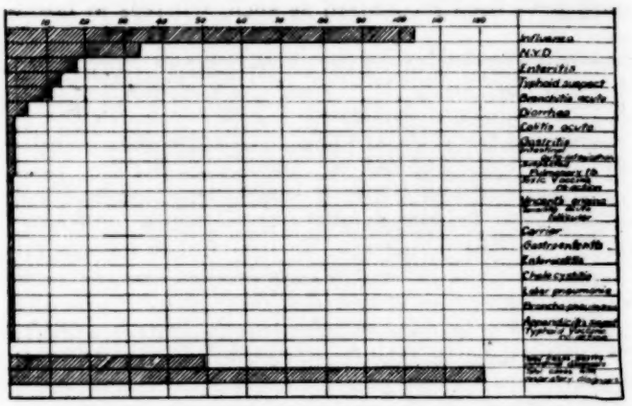


Chart 14.—Preliminary diagnosis in 206 cases of proved typhoid.

TIME RELATIONSHIP TO VACCINATION

Having ascertained that vaccination did not change the essential characteristics of the disease as it was found in the hospital and that it produced no such marked alteration in the incidence of complications or in the mortality as to be termed decisive, let us examine the other phase of the situation, the effect, if any, produced by varying intervals of time after the inoculations.

TABLE 4.—RELATIONSHIP BETWEEN TIME INTERVAL SINCE VACCINATION AND SEVERITY OF THE DISEASE IN TWO HUNDRED AND SEVEN CASES OF PROVED TYPHOID

Months Since Inoculation	Mild Course, per Cent.	Moderately Severe, per Cent.	Severe (Recovered) per Cent.	Died, per Cent.	Total Cases
1	57.6	24.2	3.0	15.2	33
2	12.5	62.5	12.5	12.5	8
3	57.2	28.5	0.0	14.3	7
4	11.1	44.4	22.2	22.3	9
5	32.0	52.0	8.0	8.0	25
6	31.5	47.4	10.5	10.6	19
7	40.0	40.0	20.0	0.0	20
8	66.6	26.7	0.0	6.7	15
9	31.2	31.2	18.8	18.8	16
10	0.0	33.3	66.7	0.0	3
11	12.5	62.5	25.0	0.0	8
12	40.0	40.0	20.0	0.0	5
13	16.6	66.7	16.7	0.0	6
14	20.0	60.0	20.0	0.0	5
15	18.2	36.3	18.2	27.3	11
16	0.0	66.7	33.3	0.0	6
17	0.0	50.0	25.0	25.0	4
18	25.0	50.0	25.0	0.0	4
19	0.0	0.0	0.0	100.0	1
20	50.0	50.0	0.0	0.0	2
Total					207

First, as regards the severity of the disease: In 207 cases of *B. typhosus* infection in which the date of inoculation was obtainable and the severity of the disease could be determined, we were able to tabulate the data presented in Table 4.

More instructive information is obtained on computing the average severity of the disease (severe percentage combined with fatal percentage) for six month periods following inoculation (Table 5).

There is seen a small but progressive increase in severity with lapse of time after inoculation. If we accept only those months that show ten or more cases

as being sufficiently large numbers to give reliable information, we find for one month periods the following:

It appears that the average severity of the disease remained fairly constant throughout the first eight months following inoculation, after which it increased gradually.

The incidence of relapses during this period is not notably changed. During the first month relapses ocurred in 10 per cent. and during the first eight months in 11.9 per cent., as compared with 10 per cent. for the total series. Likewise, complications occurred in 21.5 per cent. during the first month, in 23.2 per cent. during the first eight months, and in 33.5 per cent. during the entire period. The last figure becomes higher because in the nineteenth month two complications occurred in one case, giving a resultant percentage of 200.

The type of onset of the disease appears to be influenced by the lapse of time after vaccination. Acute onset predominated in the first month, when it occurred in eighteen out of twenty-nine cases. During all other months the onset usually was gradual. Sixteen out of the twenty-nine cases showed onset between the

TABLE 5.—AVERAGE SEVERITY OF THE DISEASE

Months after Inoculation	Severity Percentage
From 1 to 6	11.6
7 to 12	14.7
13 to 18	15.9

TABLE 6.—AVERAGE SEVERITY BY MONTHS FOLLOWING INOCULATION

Month	No. of Cases	Severity Percentage
1	33	9.1
5	25	8.0
6	19	10.5
7	20	10.0
8	15	3.3
9	16	18.8
15	11	22.7

seventh and the twelfth days after inoculation—the recognized usual incubation period for typhoid fever. Imperfect vaccine with unkilled organisms as a cause of these cases is a possibility, but in our opinion a very remote one. Results of laboratory accidents, both reported and some unreported but with which I am personally acquainted, incline us to the belief that if living typhoid organisms were inoculated through the skin into a healthy adult, the chances are that he would not develop typhoid fever. We are particularly convinced of this as regards attentuated cultures. Most cases of laboratory infection appear to be due to hand to mouth contagion.

We know that about ten days are required after the introduction of antigen, be it living organism or killed vaccine, before antibodies appear in abundance and, in the case of the former, before disease symptoms become manifest. We also know that until the reactive period the organisms multiply freely in the body. If a man is inoculated on the first day with reliable vaccine and on the fourth or fifth becomes infected through contaminated drinking water, the organisms will grow abundantly within the body for a time. But this time will not be as long as it would were he not vaccinated. In the latter case it would be from seven to fourteen, usually ten days, after *infection*. In the former it would be that interval after *inoculation*, when the antibodies called out by the artificial antigen would be present in numbers and would act on the living, growing virus. This we postulate to be the explanation for the larger number of cases occurring in post-vaccinated at the end of the incubation period. Patients in this group with onset preceding the seventh day were probably infected before inoculation. All patients who fell ill with the disease during the first month after inoculation were in a camp where there was a small epidemic of typhoid at the time, and all were vaccinated with the lipovaccine.

(To be continued)

Clinical Notes, Suggestions, and New Instruments

BLOODLESS THORACOSTOMY

R. J. BEHAN, M.D., PITTSBURGH

There are so many methods of trocar drainage of empyema cavities that I have hesitated to suggest another. However, since most of these methods have certain defects and are cumbersome and difficult of application, I thought it would be wise to describe a method minus such difficulties that I have used for the last four years.

At present there does not exist much antagonism to puncture drainage of an empyemic cavity; but four years ago such a procedure was radical, and was regarded with a good deal of skepticism. It was contended that a wide hole in the chest wall was necessary for empyema drainage, and it was held that drainage could not be thoroughly established through a small opening. It was also held that if a small opening should be made into the chest wall and a drainage tube inserted through this opening, the impinging of the ribs against the tube would block the tube and cut off the drainage.

So many of the patients having either acute or chronic empyema are in such bad condition and are so feebly resistant that any operative interference is very dangerous, especially operative interference that entails shock. The removal of a rib, with the cutting, etc., that is associated, causes some shock and has an operative risk; but the pushing through the chest wall in an intercostal space of a trocar and a cannula, after the area has been thoroughly anesthetized, causes little shock and is associated with hardly any risk.

It was with the idea of developing an instrument which could be easily used, which would not collapse with rib pressure, and which could be obtained at a reasonable cost, that I devised an apparatus, and had Harvey Pierce & Co. of Philadelphia make it for me in 1915.

The apparatus consists of three essential elements.

First, a very long aspirating needle (*a*) with a detachable nipple (*b*) which will fit a record syringe (*c*). This needle is calibrated from the tip to the hilt in centimeters and has a large lumen.

Second, a trocar (*d*) and a cannula (*e*). The trocar is of the shape shown in the illustration. It consists of a blade portion with a handle bent almost at right angles. At the upper part of the trocar blade is a groove, made so that it will accommodate the long aspirating needle. Over the trocar can be sheathed a cannula, which is calibrated in centimeters from the tip to the hilt. Over this cannula is drawn a shoulder-piece or sleeve (*f*), which can be tightened and firmly fixed at any point on the cannula. This shoulder has on it, on each side, a slit through which a tape can be threaded. This tape is passed around the body of the patient and tied so that the cannula is held firmly in place. At the end of that part of the cannula which is external to the patient is a small hole through which a suture, which has been passed through a rubber retention catheter, (*g*), introduced through the cannula (after the trocar has been removed), may be threaded and tied.

This self-retaining catheter (*g*), with its obturator (*h*), is the third essential constituent of this apparatus.

The trocars and cannulas are in various sizes and lengths to allow for different widths of the intercostal spaces and the varying depths at which pus is found. The depth to which a cannula may be inserted may be so regulated by the adjustable sleeve or shoulder-piece on the cannula that an abscess of the lung, even some distance from the surface, may be drained without danger.

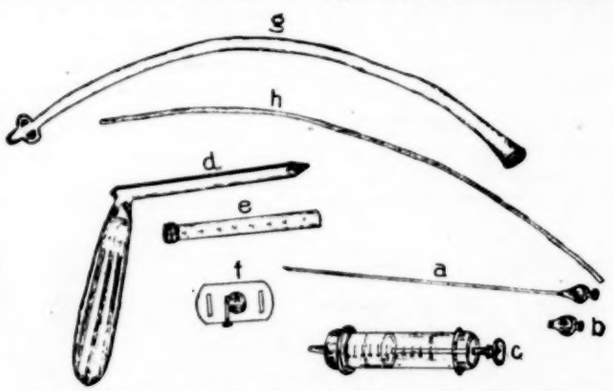
OPERATIVE TECHNIC

The empyema or abscess cavity is localized by physical examination and the roentgen-ray. Then the skin over the lung abscess or empyema is sterilized by tincture of iodin, and is anesthetized by procain 1 per cent., so that the tissues down to and including the pleura are desensitized.

The large needle attached to a record syringe is now inserted. As soon as the tip of the needle has passed through the skin, the piston is drawn up in the barrel so that there is a constant negative pressure in the needle. The needle is now inserted directly toward the supposed location of the empyema or abscess.

As soon as the needle enters the pus cavity, pus is aspirated into the syringe by negative pressure. The syringe is detached and the needle is left in place. The depth at which pus is found is noted on the needle. The nipple of the needle is now removed.

Then the trocar with its cannula, the shoulder of which has been set at a little more than the depth indicated on the needle, is threaded on the obturator (shown in the illustration) and is pushed down over the needle into the cavity. The needle and trocar are now removed, the cannula being held in place by the fingers of the left hand of the operator. A rubber self-retaining catheter of a slightly larger size than the lumen of the cannula is now threaded on the obturator and is put on the stretch so that the portion which is to enter the cannula is of considerably less diameter than when in its normal state of tension. It is then pushed through the cannula into the pus cavity.



Apparatus for performing bloodless thoracostomy: *a*, puncture, needle; *b*, nipple (detachable); *c*, record syringe; *d*, trocar; *e*, cannula; *f*, sleeve; *g*, catheter; *h*, obturator.

During these procedures a slight amount of air may enter the pleural cavity. Such entrance may be unavoidable, but is of no consequence. I have never found any ill resulting from it. However, aspiration of air generally does not occur, as the pus is at a greatly increased pressure and immediately drips out of the needle, or will run out of the catheter after it has been inserted. Immediately on the insertion of the catheter, after the obturator is withdrawn, I block off the catheter by placing on it a hemostat.

The tape, attached to the shoulder of the cannula, is tied around the chest of the patient. A piece of very thin gauze, well coated with petrolatum, is wound around the cannula beneath its shoulder. A suture is then passed through the catheter, which is held fixed in place at the proper depth. This suture is generally of linen or silk. As a further protection, the shoulder of the cannula may be sutured with silkworm gut or with linen to the skin.

On the catheter itself a two-way cock may be inserted. Most frequently we insert a rubber tube connection and drain into a bottle alongside the patient's bed, as is done for empyema of the gallbladder. It is also common with us to use the so-called Woulfe bottle drainage, and at the same time we have the patient blow the water from one of the bottles to another. If a rubber or glass Y has been placed on the tube, surgical solution of chlorinated soda (Dakin's solution) may be instilled through one of the arms of the Y, if it is necessary, or the solution may be run directly into the cavity through the catheter.

As a final dressing, gauze is applied around the tube and cannula, and the tapes passing around the chest are covered with adhesive plaster which has been moistened with ether, in order to make it stick.

RESULTS

I have used the foregoing method in numerous cases, and have invariably found it satisfactory. It has been adopted by my colleagues in the hospital, one of whom used it extensively during the influenza epidemic of 1918, and he states that in no case did he have any difficulty.

The entire method is very simple and causes absolutely no shock to the patient. Little patients who have been brought to our institution almost moribund have improved wonderfully from day to day with the trocar-cannula drainage inserted under a local anesthetic. I have used this method also in cases of lung abscess. In one case, that of a child, the abscess had communicated with a bronchus, so that for some time he had been coughing up pus. The abscess cavity was definitely located by the roentgen-ray. It was about 2 inches from the surface of the lung, in the third interspace in the anterior axillary line on the right side. The needle was inserted and pus was found. The drainage was then introduced, according to the technic described above. Considerable foul pus was evacuated. Immediately after drainage had been instituted, the disagreeable, foul sputum ceased. The temperature dropped, and the child made a quick recovery, except for a persisting sinus, which was finally healed by the injection of Beck's paste.

In another case of lung abscess the patient inside of a week, after drainage had been instituted, began to take on flesh. The cough had ceased and there was no more foul sputum.

The apparatus is such that it enables us to reach deep-seated abscesses of the lung which, otherwise, would be inaccessible.

So far, I have had no hemorrhage, although I always, of course, follow the needle which has localized the pus and has been left in place. I have allowed the cannula to remain in the chest wall for long periods. It does not seem to produce any necrosis of the surrounding tissues or of the adjacent ribs. The opening remains absolutely air-tight for at least eight or ten days; then if it leaks air somewhat, the leakage may be controlled for another week or ten days by smearing over and around the cannula large quantities of petrolatum.

As I have said, in no case have I encountered disagreeable or unsatisfactory after results.

Suite 6079, Jenkins Arcade Building.

Tobacco Smoking in Pulmonary Tuberculosis.—There is some conflict of opinion about the harmfulness of tobacco smoking in pulmonary tuberculosis, and at least one writer has tried to prove that it is actually beneficial. Most sanatoriums limit the time for smoking to half an hour after meals. Certainly, smoking before meals is definitely harmful in that it satisfies by numbing the appetite at the time when this ought to be keenest. Quite apart from the action of tobacco on the circulation, it is generally acknowledged that it is an irritant to the upper air passages. Many a patient will admit that he has more real sputum (not merely saliva) when he is smoking heavily than when he gives it up. Nevertheless, the psychologic factor is again so strong as to decide policy in this respect; and where men become miserable or restless when they are deprived of their tobacco, it is better to allow it in moderation after meals. Patients with laryngeal tuberculosis should be forbidden the use of tobacco altogether.—James Watt, *J. State Med.*, March, 1920.

STATE BOARD STATISTICS FOR 1919

ANNUAL PRESENTATION BY THE COUNCIL ON MEDICAL EDUCATION OF RESULTS OF STATE BOARD EXAMINATIONS

On pages 1084 to 1091 are three tables, A, B and C, giving in detail the results of the various state medical license examinations held during 1919. All state licensing boards sent in reports and the figures have been carefully verified.

Tables A and B, when read from left to right, show for each medical college named (*a*) the number of graduates appearing for examination in each state, (*b*) whether they passed or failed, (*c*) the total number examined during the year, (*d*) the number who passed, (*e*) the number who failed, (*f*) the percentage of failures, and (*g*) the number of states in which graduates of that school appeared for examination. Read from above downward, they give the results by states, showing (*h*) the number registered and rejected from each college, (*i*) the total numbers examined, registered and rejected, and (*j*) the percentage of rejections. The majority of graduates take the license examination in the state in which the college is located, as shown by the dark diagonal zone of figures passing from the upper left to the lower right corner of each table. These tables are worthy of careful study, since important deductions are possible. The marginal numbers will enable one to follow readily the line for any college.

Graduates of All Years Examined in 1919

Table A shows the results for all candidates who took examinations in 1919, regardless of the years in which they graduated. This shows that altogether 4,736 candidates were examined last year, as compared with 3,637 in 1918, 4,730 in 1917, 4,850 in 1916 and 5,313 in 1915. This year shows an increase of 1,099. Previously, there had been a steady decrease since 1906 owing chiefly to (*a*) the larger registration through reciprocity, and (*b*) the general diminution in the number of medical colleges, students and graduates. The marked decrease last year was due to the enlistment of many physicians for military medical service. Of those examined this year, 14.3 per cent. failed, as compared with 13.3 in 1918, 14.1 per cent. in 1917, 15 per cent. in 1916 and 15.6 per cent. in 1915.

There were 79 medical colleges in the United States granting degrees in 1919 which had graduates examined, as compared with 80 in 1918, 89 in 1917 and 1916 and 93 in 1915. There has been a decrease of 74 since 1905, when graduates from 153 medical colleges were examined. The statistics covering schools which have ceased to exist are included in the line for "miscellaneous colleges."

Graduates of Canadian schools were examined in 22 states. The largest number, 23, were examined in New York, the next largest number being 8 examined in Massachusetts. The figures are given separately in order to show the number of candidates coming from each, and to show the successes of their graduates at the examinations. Altogether, 71 candidates from Canadian colleges were examined, of whom 22, or 31 per cent., failed.

Foreign graduates were examined in 17 states, the total examined being 67, and of this number 30, or 44.8 per cent., failed. In 1918, 45 foreign graduates were examined. The largest number of foreigners examined in any state in 1919 was 21 in California, where 9, or 42.9 per cent., failed.

Caution in Forming Conclusions

In making comparisons on the basis of these statistics, the reader must keep in mind (*a*) the number examined, since the larger the number of graduates examined, the more accurate is the finding; (*b*) the number of states in which a school's graduates have been examined, since the larger this number, the more accurate will be the conclusions; (*c*) the character of the board making the examination and the methods employed, since some boards refuse to examine graduates of inferior medical colleges, while others (see Table H) not only examine graduates of all medical colleges but also admit osteopaths to the physicians' and surgeons' examination. Some boards also hold careful examinations which include practical laboratory and clinical tests, or they mark the papers more severely, while others, especially partisan boards, are very lenient. Although conditions are undergoing a gradual improvement, it is still true that the license examinations, as usually conducted, are much more lenient than those required in other countries. It is particularly important, in forming conclusions based on these statistics, to note for each college the states in which its graduates are not admitted to examination—information set forth with these statistics in Table D. A state board which admits to its examinations graduates of low-grade medical schools would be expected to have a higher percentage of failures.

Undergraduates and Osteopaths Examined During 1919

For the last three years the few undergraduates examined have been accidental instances due evidentaly to imperfect credentials. In 1906, there were 703 undergraduates examined, and 342 were licensed. Colorado is now the only state which will knowingly admit nongraduates to its examinations, but only six have been licensed in that state in fourteen years, two having been so licensed this year. The door has been closed, therefore, against the admission to practice of those whose medical training is known to be incomplete. At present, however, some boards are registering as physicians and surgeons, by examination or by reciprocity, graduates of osteopathic colleges—no one of which compares favorably with the lowest grade Class C medical college—even though in two of these states—Colorado and Texas—the boards refuse to admit graduates of Class C medical schools to their examinations. (See Table D on pages 1092 and 1093.)

During 1919, in California, 28 graduates of osteopathic colleges were admitted to the regular examination for licenses as physicians and surgeons, and of this number 13, or 46.4 per cent., were granted licenses. In Colorado, of 25 osteopaths examined, 14, or 56 per cent., were granted licenses as physicians and surgeons (see Tables G and I). Two osteopaths were so licensed in Washington and one each in New Hampshire and Texas. Altogether 57 osteopaths were examined as physicians and of this number 31, or 54.4 per cent., passed.

Recent Graduates Examined During 1919

Table B gives the results for graduates of 1915 to 1919, inclusive, examined during 1919. This table is important, since it deals with recent graduates, and is, therefore, the fairest basis for comparison between colleges. Of all candidates examined in 1919, 3,904, or 82.4 per cent., were recent graduates, and of this number, 10.5 per cent. failed, as compared with 14.3 per cent. for all candidates.

Old Practitioners Examined During 1919

Table C is so arranged as to show in comparison the results for graduates of all years (first column), for recent graduates (second column), for graduates of 1914 and previous years (third column), and for graduates of 1919 (fourth column). Of the graduates of 1914 and previous years—"old practitioners"—767 were examined, and of this number 236, or 30.8 per cent., failed, as compared with 10.5 per cent. of failures for recent graduates. This high percentage of failures is due largely to the long time these candidates have been out of college and to the fact that they are commonly required to take the same examination as recent graduates. Justice to these older physicians, who have been licensed, but who, for good reasons, desire to change their locations, is a strong argument for the use of

(CONTINUED ON PAGE 1091)

Marginal Number	NAME OF COLLEGE	1 Alabama P	1 Alabama F	2 Arizona P	2 Arizona F	3 Arkansas P	3 Arkansas F	4 California P	4 California F	5 Colorado P	5 Colorado F	6 Connecticut P	6 Connecticut F	7 Delaware P	7 Delaware F	8 Dist. Columbia P	8 Dist. Columbia F	9 Florida P	9 Florida F	10 Georgia P	10 Georgia F	11 Idaho P	11 Idaho F	12 Illinois P	12 Illinois F	13 Indiana P	13 Indiana F	14 Iowa P	14 Iowa F	15 Kansas P	15 Kansas F	16 Kentucky P	16 Kentucky F	17 Louisiana P	17 Louisiana F	18 Maine P	18 Maine F	19 Maryland P	19 Maryland F	20 Massachusetts P	20 Massachusetts F	21 Michigan P	21 Michigan F	22 Minnesota P	22 Minnesota F	Marginal Number
	ALABAMA																																													
1	University of Alabama School of Medicine	3	0															2	1															1	0											1
	ARKANSAS																																													
2	University of Arkansas Medical Department	0	1			11	1	1	0																									2	0											2
	CALIFORNIA																																													
3	College of Medical Evangelists							6	0																															1	0					3
4	College of Physicians and Surgeons, Los Angeles			1	0			23	5																															1	0					4
5	College of Physicians and Surg., San Francisco							3	6																																					5
6	Leland Stanford Junior Univ. School of Medicine							16	0																																					6
7	Oakland College of Medicine and Surgery							2	0																																					7
8	University of California Medical School																	1	0																					1	0					8
	COLORADO																																												
9	University of Colorado School of Medicine									18	0							1	1					1	0																					9
	CONNECTICUT																																													
10	Yale University School of Medicine											11	0																					1	0					1	0			1	0	10
	DISTRICT OF COLUMBIA																																													
11	Georgetown University School of Medicine			2	0							3	1			7	0	1	0																					1	0			1	0	11
12	George Washington University Medical School															19	0					1	0	1	0													1	0	1	0			1	0	12
13	Howard University School of Medicine															7	2							1	1													1	0	1	0					13
	GEORGIA																																													
14	Emory University School of Medicine	2	1					1	0	1	1							3	1	27	0													1	0											14
15	University of Georgia Medical Department																	1	0	7	0																									15
	ILLINOIS																																												
16	Chicago Medical School									1	0					0	1					1	0	27	18															3	8					16
17	Hahnemann Medical College and Hospital			1	0					1	0											1	0	18	0			2	0											1	0					17
18	Loyola University School of Medicine	1	1			1	0	0	1			1	1					1	0	3	0	1	0	82	12			2	2			0	1							1	0			1	0	18
19	Northwestern University Medical School			3	0			1	1													2	0	87	1					1	0							1	0							19
20	Rush Medical College (University of Chicago)			1	0			3	0	1	0									1	0	5	0	127	1			5	0											2	0	1	0	3	0	20
21	University of Illinois College of Medicine			3	0	1	0	1	0	1	0							2	0			1	0	72	2			5	0	1	0									2	0			4	0	21
	INDIANA																																													
22	Indiana University School of Medicine			1	0																			2	0	28	0					1	0											22
	IOWA																																													
23	State University of Iowa College of Medicine																					1	0	2	0			43	0															23
24	State Univ. of Iowa Coll. of Homeo. Med.—H.																											1	0															24
	KANSAS																																												
25	University of Kansas School of Medicine							1	0													1	0					1	0	20	0													25
	KENTUCKY																																												
26	University of Louisville Medical Department	0	1									1	1					4	2													1	0	18	1											26
	LOUISIANA																																												
27	Tulane University of Louisiana School of Med.	4	0	1	0	3	0					1	0					3	0	1	0													59	0					1	0					27
	MAINE																																												
28	Bowdoin Medical School															1	0	1	0			1	0							1	0					17	0			4	0					28
	MARYLAND																																												
29	Johns Hopkins University Medical Department	2	0	1	0			2	1			5	0			4	0	1	0	1	0			3	0	2	0									1	0	72	3	5	0	1	0	1	0	29
30	Univ. of Md. School of Med. & Coll. of P. & S.	1	0	1	0	1	0	1	0			0	1	1	0	2	0	2	0	2	0	2	0													2	0	57	3	6	0					30
	MASSACHUSETTS																																													
31	Boston University School of Medicine																	1	0			1	0													1	0			9	1					31
32	College of Physicians and Surgeons, Boston											0	1					1	0																					6	7					32
33	Medical School of Harvard University			1	0			2	0	2	0	6	1			2	0	1	1					3	0	1	0			1	0			1	0	7	0	2	0	95	0			5	0	33
34	Middlesex College of Medicine and Surgery.—N.															1	0																							6	12					34
35	Tufts College Medical School							0	1			10	3							1	0							1	0							7	1			84	5			1	0	35
	MICHIGAN																																												
36	Detroit College of Medicine and Surgery			1	0			0	1									2	0					1	0																	27	0			36
37	University of Michigan Medical School			1	0													1	0													1	0							3	0	6	0			37
38	University of Michigan Homeo. Med. School.—H.							1	0																															1	0	9	0			38
	MINNESOTA																																												
39	University of Minnesota Medical School			1	0			1	0															1	0																		67	0	39
	MISSOURI																																												
40	Kansas City College of Medicine and Surgery.—N.					32	1																																					40
41	Kansas City Univ. of Phys. and Surgs.—N.									1	0																									1	0							41
42	St. Louis College of Physicians and Surgeons			1	0			0	1	0	2																							1	0									42
43	St. Louis University School of Medicine			1	0	1	0	1	0													1	0	7	0			3	0	1	0					1	0							43
44	Washington University Medical School									1	0													2	1			1	0					1	0			1	0	2	0					44
	NEBRASKA																																												
45	John A. Creighton Medical College			0	1					1	0	1	0									1	0					1	0	1	0			1	0					1	0					45
46	University of Nebraska College of Medicine													2	0									1	0			4	0															1	0	46
	NEW YORK																																													
47	Albany Medical College			0	1							1	0					0	1																					2	0			2	0	47
48	Columbia University College of Phys. and Surgs.							1	0			13	0			1	0	1	0	4	0															1	0			6	0	1	0	2	0	48
49	Cornell University Medical School					1	0					5	0			1	0																							1	0			1	0	49
50	Fordham University School of Medicine											4	1																																	50
51	Long Island College Hospital							0	1			3	0																											1	0	1	0			51
52	N. Y. Homeo. Med. Coll. and Flower Hosp.—H.			1	0			1	0			3	0	3	0																							1	0	2	0					52
53	Syracuse University College of Medicine																																										1	0			53
54	University and Bellevue Hospital Med. Coll.											4	0					1	0					1	0			1	0							1	0			1	0					54
55	University of Buffalo Medical Department																	1	0					3	0																					55
	OHIO																																													
56	Eclectic Medical College.—E.			2	0			0	1																																			56
57	Ohio State University College of Medicine			1	0																																							57
58	Ohio State University Coll. of Homeo. Med.—H.																							1	0															1	0					58
59	University of Cincinnati College of Medicine									1	0											1	0									1	0									1	0			59
60	Western Reserve University School of Medicine							1	0									1	0																											60
	OKLAHOMA																																													
61	University of Oklahoma School of Medicine																	1	0											1	0									1	0					61
	OREGON																																													
62	University of Oregon Medical School																																			1	0									62
	PENNSYLVANIA																																													
63	Hahnemann Medical College and Hospital.—H.													1	0	1	0					1	0																	3	0					63
64	Jefferson Medical College	1	0			1	0	3	0	2	0	6	0	3	0			6	0					2	0									1	0	1	0	2	0	4	0			2	0	64
65	Temple University Department of Medicine													3	1																							0	1	1	0					65
66	University of Pennsylvania School of Medicine	1	0					4	0			1	1	3	0	1	0			1	0	2	0	2	0			4	0							1	0	2	0	1	0	1	0			66
67	University of Pittsburgh School of Medicine											1	0											1	0																					67
68	Woman's Medical College of Pennsylvania	1	0																																					3	0					68
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H. = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

Marginal Number	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Totals	Examined—Passed	Examined—Failed	Percentage of Failures	No. States Exam. in	Marginal Number
	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions					
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
1	2 0												1 0																10	9	1	10 0	5	1
2		1 0																											17	15	2	11.8	5	2
3					2 0																			1 0					10	10	0	0.0	4	3
4																												1 0	31	26	5	16.1	4	4
5					2 0																								11	5	6	54.5	2	5
6									2 0																				18	18	0	0.0	2	6
7																													2	2	0	0.0	1	7
8																								1 0					3	3	0	0.0	3	8
9																													21	20	1	4.8	3	9
10									4 0							1 0							1 0						29	20	0	0.0	7	10
11			1 0				2 0		0 2			2 0								1 0									23	20	3	13.0	10	11
12									1 0						1 0			1 0						1 0	1 0		1 0	2 0	33	33	0	0.0	14	12
13		3 0					1 0		1 4						4 0		1 0		1 0				1 0						29	22	7	24.1	11	13
14									0 2	1 2		1 0					5 1												50	42	8	16.0	10	14
15									0 1								3 1												13	11	2	15.4	4	15
16																								2 0			0 1		62	34	28	45.2	7	16
17																				1 0				1 0					26	26	0	0.0	8	17
18	1 0	4 0	0 3	0 2					1 0		0 1	1 1	1 0	1 0				1 0	2 0		1 0	1 0	1 0	4 1	2 0		7 1	2 2	153	124	29	19.0	30	18
19		1 0	1 0						0 1		1 0	1 0		1 0				2 1											111	107	4	3.6	15	19
20		1 0	6 0						1 1			1 0		1 0			1 0	5 0			6 0			3 1		6 0			183	180	3	1.6	20	20
21			1 0						1 1				1 0	1 0				2 0						2 1	1 0		1 0	1 0	168	104	4	3.7	20	21
22																													32	32	0	0.0	4	22
23			1 0																										47	47	0	0.0	4	23
24																													1	1	0	0.0	1	24
25		9 0																											32	32	0	0.0	5	25
26									0 3		0 1				2 2		1 0		1 0		1 0			0 2	0 1			1 2	46	30	16	34.8	14	26
27	6 0	1 0							1 0	3 0			1 0							6 0			1 0					2 1	95	94	1	1.1	16	27
28																													25	25	0	0.0	6	28
29		3 0					2 0		6 1	2 0		7 0			1 0		1 0		1 0	2 0			8 0	2 0	1 0				142	137	5	3.5	26	29
30							2 0		5 4	6 0					4 0	2 1	5 0						3 0		4 0			3 1	122	112	10	8.2	22	30
31					1 0	1 0			2 1				1 0		1 0		1 0												21	19	2	8.2	10	31
32																1 1								0 1					18	8	10	55.6	5	32
33		2 0				1 0			12 3			1 0		1 0		3 0	1 0				3 0	1 0		2 0	3 0				164	159	5	3.0	25	33
34																													19	7	12	63.2	2	34
35						1 0	1 0		8 8				1 0		1 0	4 1													139	120	19	13.7	13	35
36									0 1		1 0																		35	33	2	5.7	7	36
37					1 0				7 1															1 0		3 0		1 0	25	24	1	4.0	9	37
38									0 1																1 0				13	12	1	7.7	5	38
39			1 0											1 0										1 0					73	73	0	0.0	7	39
40																																		
41					1 0															0 1							1 0		35	33	2	5.7	3	40
42		5	1 0	1 2	0 1	0								1 0					1 0					2 0			1 1		9	8	1	11.1	7	41
43		44	0 0	1															19 1								1 2		38	30	8	21.1	10	42
44		42	0 1	0					1 0											1 0							1 1		65	63	2	3.1	13	43
45			2 1	19 0					1 0			1 0	2 0		0 1			1 0		1 0	3 0			1 0		3 0			66	64	2	3.0	17	44
46		1 0		73 2										1 0										1 0				1 0	34	32	2	5.9	14	45
47									17 2					1 0							1 0						2 0		87	85	2	2.3	8	46
48		1 0		1 0	1 0		3 0		134 16			1 0	1 0				2 0			1 0	3 0		1 0	1 0	1 0	1 0			27	23	4	14.8	7	47
49									28 3						1 0														198	182	16	8.1	23	48
50							1 0		69 14					1 0															41	38	3	7.3	7	49
51			1 0						54 7																				90	75	15	16.7	4	50
52							1 0		54 35						2 0							1 0							68	60	8	11.8	6	51
53									23 0																				104	69	35	33.7	10	52
54		1 0					5 0		88 16	3 0		1 0			2 0	1 0			1 0	1 0									26	26	0	0.0	4	53
55					1 0				46 0			1 0			1 0														127	111	16	12.6	14	54
56		1 0		4 0					0 1			25 2	1 0					1 0	1 0						0 2				53	53	0	0.0	6	55
57												17 0											1 0						41	35	6	14.6	10	56
58												9 0			1 1														19	19	0	0.0	3	57
59												23 0													1 0			1 0	13	12	1	7.7	4	58
60												42 0			0 1									1 0	1 0				29	29	0	0.0	7	59
61								1 0	1 1			1 0	14 0				1 1												47	46	1	2.1	6	60
62			1 1											16 0										4 0					23	21	2	8.7	8	61
63							2 0		0 1			1 0			13 1	1 0													23	22	1	4.4	4	62
64	2 0	2 0	2 0	2 0	1 0		21 0		10 7	25 0		9 0	1 0	3 0	59 3	2 0	3 1		1 0	1 0	5 0		3 0	5 0	5 0	2 0		4 0	213	202	11	5.2	35	63
65		1 0													16 2		1 0								1 0				27	23	4	14.8	6	64
66						1 0	11 0		7 4	11 0		1 0		1 0	62 7			1 0	1 0		3 0		1 0	5 0					142	130	12	8.5	25	65
67									1 1			2 0			23 1													30	28	2	6.7	5	66
68									3 0						5 1								1 0	1 0					15	14	1	6.7	6	67
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						68

TABLE A—PHYSICIANS EXAMINED BY

Marginal Number	NAME OF COLLEGE	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	SOUTH CAROLINA																																													
69	Medical College of the State of South Carolina											1	0			1	0	2	0	2	0																									69
	TENNESSEE																																													
70	Meharry Medical College	2	2			3	4					0	1					0	1	4	1			7	29	1	0			2	0	5	4	1	5			4	2							70
71	University of Tennessee College of Medicine			1	0	6	0	0	1	1	0					1	0	1	2			1	0											2	0											71
72	Univ. of West Tennessee Medical Department																																													72
73	Vanderbilt University School of Medicine	2	0			1	0			2	0							2	0	1	0											1	0							1	0					73
	TEXAS																																													
74	Baylor University College of Medicine							1	0																																					74
75	University of Texas Department of Medicine																																													75
	VERMONT																																													
76	University of Vermont College of Medicine							0	1			6	2																							1	0			12	0					76
	VIRGINIA																																													
77	Medical College of Virginia							1	0			0	3	1	0			1	1	1	0																									77
78	University of Virginia Department of Medicine													1	0					2	0															1	0									78
	WISCONSIN																																													
79	Marquette University School of Medicine																																													79
	CANADA																																													
80	Dalhousie University Faculty of Medicine															1	0																					1	0	1	0					80
81	Laval University Faculty of Medicine																																			1	0			1	3					81
82	McGill University Faculty of Medicine							1	0			3	1			1	0					1	0	2	0											1	0			2	0					82
83	Montreal School of Medicine and Surgery																																			0	1			0	1					83
84	Queen's University Faculty of Medicine							1	0									1	1					1	0																					84
85	University of Manitoba, Manitoba Medical College																																													85
86	University of Toronto Faculty of Medicine			1	0			1	0	2	0																													1	0					86
87	Western University Faculty of Medicine																							0	1													0	1			4	0			87
88	Foreign Colleges			2	0			12	9	0	1							1	0					1	1	1	0			0	1									2	0					88
89	Miscellaneous Medical Colleges	3	6	18	3	8	1	3	11	5	1	4	6	1	0	0	3	16	5	2	4	5	0	16	29	1	0	4	2	2	2	3	1	7	1			1	2	18	4			2	0	89
90	Undergraduates and Osteopaths			1	0			13	15	16	11																																			90
91	Totals by States	35		53		77		165		73		118		20		57		81		65		31		571		34		82		35		38		86		46		156		346		52		98		91
92	Totals — Examined—Passed	23		48		70		109		57		94		19		51		64		60		31		475		34		78		32		31		80		43		145		305		52		98		92
93	Totals — Examined—Failed	12		5		7		56		16		24		1		6		17		5		0		96		0		4		3		7		6		3		11		41		0		0		93
94	Percentage of Failures	34.3		9.4		9.1		33.9		21.9		20.3		5.0		10.5		21.0		7.7		0.0		16.8		0.0		4.9		8.6		18.4		7.0		6.5		7.1		11.8		0.0		0.0		94
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H. = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

TABLE B—GRADUATES OF 1915 TO 1919, INCLUSIVE,

Marginal Number	NAME OF COLLEGE	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	ALABAMA																																													
1	University of Alabama School of Medicine	3	0															1	0																											1
	ARKANSAS																																														
2	University of Arkansas Medical Department	0	1			7	1	1	0																											2	0									2
	CALIFORNIA																																													
3	College of Medical Evangelists							6	0																																	1	0					3
4	College of Physicians and Surgeons, Los Angeles			1	0			23	5																																	1	0					4
5	College of Physicians and Surg., San Francisco							3	6																																							5
6	Leland Stanford Junior Univ. School of Medicine							16	0																																							6
7	Oakland College of Medicine and Surgery							2	0																																							7
8	University of California Medical School																																									1	0					8
	COLORADO																																														
9	University of Colorado School of Medicine									18	0																																					9
	CONNECTICUT																																														
10	Yale University School of Medicine											10	0																									1	0			1	0			1	0	10
	DISTRICT OF COLUMBIA																																														
11	Georgetown University School of Medicine											3	1			7	0																							1	0					11
12	George Washington University Medical School															18	0					1	0	1	0															0	1	0		1	0	12
13	Howard University School of Medicine															7	2							1	1													1	0							13
	GEORGIA																																														
14	Emory University School of Medicine	2	0					1	0									1	0	26	0																									14
15	University of Georgia Medical Department																	1	0	7	0																									15
	ILLINOIS																																														
16	Chicago Medical School									1	0					0	1					1	0	27	18																	3	8					16
17	Hahnemann Medical College and Hospital									1	0													18	0																	1	0					17
18	Loyola University School of Medicine	1	1									1	0					1	0	3	0	1	0	80	7			2	2			0	1							1	0			1	0	18
19	Northwestern University Medical School			2	0			1	0															85	1					1	0							1	0							19
20	Rush Medical College (University of Chicago)							3	0	1	0									1	0	3	0	124	0			5	0													1	0	3	0	20
21	University of Illinois College of Medicine							1	0													1	0	71	1			5	0	1	0									2	0			4	0	21
	INDIANA																																														
22	Indiana University School of Medicine			1	0																			2	0	28	0					1	0													22
	IOWA																																														
23	State University of Iowa College of Medicine																							2	0			43	0																	23
24	State Univ. of Iowa Coll. of Homeo. Med.—H.																											1	0																	24
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H. = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

| Marginal Number | 23 Mississippi | | 24 Missouri | | 25 Montana | | 26 Nebraska | | 27 Nevada | | 28 New Hampshire | | 29 New Jersey | | 30 New Mexico | | 31 New York | | 32 North Carolina | | 33 North Dakota | | 34 Ohio | | 35 Oklahoma | | 36 Oregon | | 37 Pennsylvania | | 38 Rhode Island | | 39 South Carolina | | 40 South Dakota | | 41 Tennessee | | 42 Texas | | 43 Utah | | 44 Vermont | | 45 Virginia | | 46 Washington | | 47 West Virginia | | 48 Wisconsin | | 49 Wyoming | | 50 U. S. Territories and Possessions | | Totals | Examined—Passed | Examined—Failed | Percentage of Failures | No. States Exam. in | Marginal Number |
|---|---|---

Marginal Number	NAME OF COLLEGE	1 Alabama		2 Arizona		3 Arkansas		4 California		5 Colorado		6 Connecticut		7 Delaware		8 Dist. Columbia		9 Florida		10 Georgia		11 Idaho		12 Illinois		13 Indiana		14 Iowa		15 Kansas		16 Kentucky		17 Louisiana		18 Maine		19 Maryland		20 Minnesota		21 Massachusetts		22 Michigan		Marginal Number
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	
	KANSAS																																												
25	University of Kansas School of Medicine							1	0													1	0					1	0	20	0														25
	KENTUCKY																																												
26	University of Louisville Medical Department																	1	1															17	1											26
	LOUISIANA																																												
27	Tulane University of Louisiana School of Med.	4	0			2	0					1	0					3	0	1	0											57	0											27
	MAINE																																												
28	Bowdoin Medical School															1	0																			16	0			2	0					28
	MARYLAND																																												
29	Johns Hopkins University Medical Department	1	0					2	1			1	0			2	0	1	0	1	0			3	0	2	0											70	3	5	0			1	0	29
30	Univ. of Md. School of Med. & Coll. of P. & S.	1	0	1	0	1	0	1	0			0	1	1	0	2	0	1	0	1	0	2	0											2	0	56	3	6	0					30
	MASSACHUSETTS																																												
31	Boston University School of Medicine																																			1	0			7	1					31
32	College of Physicians and Surgeons, Boston																																							6	6					32
33	Medical School of Harvard University			1	0			2	0	2	0	5	1			2	0	1	0					3	0	1	0			1	0			1	0	7	0	2	0	90	0			4	0	33
34	Middlesex College of Medicine and Surgery.—N.															1	0																							6	12					34
35	Tufts College Medical School							0	1			10	3							1	0															5	1			82	5					35
	MICHIGAN																																												
36	Detroit College of Medicine and Surgery																																							27	0					36
37	University of Michigan Medical School																																	1	0					1	0	6	0			37
38	University of Michigan Homeo. Med. School.—H.							1	0																															8	0					38
	MINNESOTA																																												
39	University of Minnesota Medical School							1	0															1	0																			67	0	39
	MISSOURI																																												
40	Kansas City College of Medicine and Surgery.—N					32	1																																					40
41	Kansas City Univ. of Phys. and Surgs.—N.									1	0																							1	0									41
42	St. Louis College of Physicians and Surgeons									0	2																																	42
43	St. Louis University School of Medicine					1	0	1	0															7	0			2	0	1	0					1	0							43
44	Washington University Medical School									1	0													1	0			1	0					1	0			1	0	2	0					44
	NEBRASKA																																												
45	John A. Creighton Medical College																											1	0	1	0							1	0					45
46	University of Nebraska College of Medicine													2	0									1	0			4	0													1	0	46
	NEW YORK																																												
47	Albany Medical College											1	0																															47
48	Columbia University College of Phys. and Surgs.							1	0			12	0							4	0																			2	0	1	0	2	0	48
49	Cornell University Medical School											4	0			1	0																							1	0					49
50	Fordham University School of Medicine											4	1																															50
51	Long Island College Hospital											3	0																															51
52	N. Y. Homeo. Med. Coll. and Flower Hosp.—H.							1	0			2	0	3	0																							1	0					52
53	Syracuse University College of Medicine																																							1	0					53
54	University and Bellevue Hospital Med. Coll.											3	0					1	0					1	0															1	0					54
55	University of Buffalo Medical Department																							1	0																					55
	OHIO																																												
56	Eclectic Medical College.—E.			1	0																																							56
57	Ohio State University College of Medicine			1	0																																							57
58	Ohio State University Coll. of Homeo. Med.—H.																							1	0															1	0					58
59	University of Cincinnati College of Medicine									1	0											1	0											1	0							1	0	59
60	Western Reserve University School of Medicine							1	0																																			60
	OKLAHOMA																																												
61	University of Oklahoma School of Medicine																	1	0											1	0									1	0					61
	OREGON																																												
62	University of Oregon Medical School																																												62
	PENNSYLVANIA																																												
63	Hahnemann Medical College and Hospital.—H.													1	0	1	0																							2	0					63
64	Jefferson Medical College	1	0			1	0	3	0	2	0	6	0	3	0			2	0					2	0															2	0	2	0	64
65	Temple University Department of Medicine													3	1																									0	1	1	0			65
66	University of Pennsylvania School of Medicine							4	0			1	1	3	0	1	0			1	0	2	0	2	0			4	0											2	0	1	0	1	0	66
67	University of Pittsburgh School of Medicine											1	0																															67
68	Woman's Medical College of Pennsylvania	1	0																																										68
	SOUTH CAROLINA																																												
69	Medical College of the State of South Carolina											1	0			1	0			1	0																							69
	TENNESSEE																																												
70	Meharry Medical College	2	2			3	3											0	1	4	1			6	24					2	0	5	4	1	5			4	2					70
71	University of Tennessee College of Medicine			1	0	6	0									1	0	1	0			1	0												1	0									71
72	Univ. of West Tennessee Medical Department																																												72
73	Vanderbilt University School of Medicine	2	0			1	0			2	0							1	0																									73
	TEXAS																																												
74	Baylor University College of Medicine							1	0																																			74
75	University of Texas Department of Medicine																																												75
	VERMONT																																												
76	University of Vermont College of Medicine											5	1																							1	0			5	0					76
	VIRGINIA																																												
77	Medical College of Virginia							1	0			0	3	1	0			1	0	1	0																							77
78	University of Virginia Department of Medicine													1	0					2	0																							78
	WISCONSIN																																												
79	Marquette University School of Medicine																																											79
	CANADA																																												
80	Dalhousie University Faculty of Medicine															1	0																					1	0					80
81	Laval University Faculty of Medicine																																			1	0			1	2					81
82	McGill University Faculty of Medicine											3	1									1	0	2	0											1	0			1	0					82
83	Montreal School of Medicine and Surgery																																			0	1									83
84	Queen's University Faculty of Medicine																							1	3																					84
85	University of Manitoba, Manitoba Medical College																																													85
86	University of Toronto Faculty of Medicine																																									1	0			86
87	Western University Faculty of Medicine																																												87
88	Foreign Colleges							2	1															0	1																					88
89	Miscellaneous Medical Colleges	2	0	2	0			3	0	2	1	3	0	1	0			1	0	2	1	1	0	10	15			1	0			1	0							1	0					89
90	Undergraduates and Osteopaths																																							5	0					90
91	Totals by States	24		11		59		97		35		93		20		49		21		58		16		521		31		73		28		33		69		37		149		282		44		89		91
92	Totals — Examined—Passed	20		11		54		83		32		80		19		46		19		56		16		453		31		71		28		27		64		35		140		248		44		89		92
93	Totals — Examined—Failed	4		0		5		14		3		13		1		3		2		2		0		68		0		2		0		6		5		2		9		34		0		0		93
94	Percentage of Failures	16.7		0.0		8.5		14.4		8.6		14.0		5.0		6.1		9.5		3.4		0.0		13		0.0		2.7		0.0		18.2		7.2		5.4		6.0		12.0		0.0		0.0		94
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H. = Homeopathic E = Eclectic; N = Nondescript; P = Passed; F = Failed.

Marginal Number	23	24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		Totals	Examined—Passed	Examined—Failed	Percentage of Failures	No. States Exam. in	Marginal Number
	Mississippi			Missouri		Montana		Nebraska		Nevada		New Hampshire		New Jersey		New Mexico		New York		North Carolina		North Dakota		Ohio		Oklahoma		Oregon		Pennsylvania		Rhode Island		South Carolina		South Dakota		Tennessee		Texas		Utah		Vermont		Virginia		Washington		West Virginia		Wisconsin		Wyoming		U. S. Territories and Possessions																	
	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F																		
25			9	0																	

Marginal Number	NAME OF COLLEGE	Graduates of All Years					Graduates of 1915-1919					Graduates of 1914 and Previous					Graduates of 1919					Marginal Number
		Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	
	ALABAMA																					
1	University of Alabama School of Medicine	10	9	1	10.0	5	6	6	0	0.0	4	4	3	1	25.0	3	3	3	0	0.0	2	1
	ARKANSAS																					
2	University of Arkansas Medical Department	17	15	2	11.8	5	12	10	2	16.7	4	5	5	0	0.0	2	6	6	0	0.0	1	2
	CALIFORNIA																					
3	College of Medical Evangelists	10	10	0	0.0	4	10	10	0	0.0	4	0	0	0	0.0	0	5	5	0	0.0	1	3
4	College of Physicians and Surgeons, Los Angeles	31	26	5	16.1	4	31	26	5	16.1	4	0	0	0	0.0	0	24	23	1	4.2	1	4
5	College of Physicians and Surg., San Francisco	11	5	6	54.5	2	11	5	6	54.5	2	0	0	0	0.0	0	3	2	1	33.3	1	5
6	Leland Stanford Junior Univ. School of Medicine	18	18	0	0.0	2	18	18	0	0.0	2	0	0	0	0.0	0	15	15	0	0.0	1	6
7	Oakland College of Medicine and Surgery	2	2	0	0.0	1	2	2	0	0.0	1	0	0	0	0.0	0	2	2	0	0.0	1	7
8	University of California Medical School	3	3	0	0.0	3	1	1	0	0.0	1	2	2	0	0.0	2	0	0	0	0.0	0	8
	COLORADO																					
9	University of Colorado School of Medicine	21	20	1	4.8	3	18	18	0	0.0	1	3	2	1	33.3	0	18	18	0	0.0	1	9
	CONNECTICUT																					
10	Yale University School of Medicine	20	20	0	0.0	7	19	19	0	0.0	7	1	1	0	0.0	1	13	13	0	0.0	4	10
	DISTRICT OF COLUMBIA																					
11	Georgetown University School of Medicine	23	20	3	13.0	10	18	15	3	16.7	6	5	5	0	0.0	4	7	7	0	0.0	2	11
12	George Washington University Medical School	33	33	0	0.0	14	27	27	0	0.0	9	6	6	0	0.0	6	9	9	0	0.0	1	12
13	Howard University School of Medicine	29	22	7	24.1	11	28	21	7	25.0	10	1	1	0	0.0	1	9	7	2	22.2	5	13
	GEORGIA																					
14	Emory University School of Medicine	50	42	8	16.0	10	38	35	3	7.7	6	12	7	5	41.7	8	27	27	0	0.0	3	14
15	University of Georgia Medical Department	13	11	2	15.4	4	12	11	1	8.3	4	1	0	1	100.0	1	8	8	0	0.0	2	15
	ILLINOIS																					
16	Chicago Medical School	62	34	28	45.2	7	62	34	28	45.2	7	0	0	0	0.0	0	10	3	7	70.0	2	16
17	Hahnemann Medical College and Hospital	26	26	0	0.0	8	22	22	0	0.0	5	4	4	0	0.0	4	20	20	0	0.0	4	17
18	Loyola University School of Medicine	153	124	29	19.0	30	133	114	19	14.4	23	20	10	10	50.0	11	72	69	3	4.2	9	18
19	Northwestern University Medical School	111	107	4	3.6	15	98	96	2	2.0	9	13	11	2	15.4	10	86	85	1	1.2	3	19
20	Rush Medical College (University of Chicago)	183	180	3	1.6	20	168	168	0	0.0	13	15	12	3	20.0	7	145	145	0	0.0	13	20
21	University of Illinois College of Medicine	108	104	4	3.7	20	89	88	1	1.1	10	19	16	3	15.8	12	80	79	1	1.2	7	21
	INDIANA																					
22	Indiana University School of Medicine	32	32	0	0.0	4	32	32	0	0.0	4	0	0	0	0.0	0	31	31	0	0.0	3	22
	IOWA																					
23	State University of Iowa College of Medicine	47	47	0	0.0	4	45	45	0	0.0	2	2	2	0	0.0	2	43	43	0	0.0	1	23
24	State Univ. of Iowa Coll. of Homeo. Med.—H.	1	1	0	0.0	1	1	1	0	0.0	1	0	0	0	0.0	0	1	1	0	0.0	1	24
	KANSAS																					
25	University of Kansas School of Medicine	32	32	0	0.0	5	32	32	0	0.0	5	0	0	0	0.0	0	29	29	0	0.0	3	25
	KENTUCKY																					
26	University of Louisville Medical Department	46	30	16	34.8	14	26	22	4	15.4	5	20	8	12	60.0	11	17	15	2	11.8	4	26
	LOUISIANA																					
27	Tulane University of Louisiana School of Med.	95	94	1	1.1	16	88	87	1	1.1	12	7	7	0	0.0	6	74	74	0	0.0	9	27
	MAINE																					
28	Bowdoin Medical School	25	25	0	0.0	6	19	19	0	0.0	3	6	6	0	0.0	5	16	16	0	0.0	1	28
	MARYLAND																					
29	Johns Hopkins University Medical Department	142	137	5	3.5	26	124	119	5	4.0	21	18	18	0	0.0	12	64	64	0	0.0	13	29
30	Univ. of Md. School of Med. & Coll. of P. & S.	122	112	10	8.2	22	116	106	10	8.6	21	6	6	0	0.0	6	39	39	0	0.0	9	30
	MASSACHUSETTS																					
31	Boston University School of Medicine	21	19	2	8.2	10	15	14	1	7.2	5	6	5	1	16.7	5	11	10	1	9.1	4	31
32	College of Physicians and Surgeons, Boston	18	8	10	55.6	5	12	6	6	46.2	2	6	2	4	66.7	5	3	3	0	0.0	1	32
33	Medical School of Harvard University	164	159	5	3.0	25	148	145	3	2.1	23	16	14	2	12.5	7	88	88	0	0.0	11	33
34	Middlesex College of Medicine and Surgery.—N.	19	7	12	63.2	2	19	7	12	63.2	2	0	0	0	0.0	0	11	4	7	63.6	1	34
35	Tufts College Medical School	139	120	19	13.7	13	130	112	18	13.6	10	9	8	1	11.1	6	95	87	8	8.4	8	35
	MICHIGAN																					
36	Detroit College of Medicine and Surgery	35	33	2	5.7	7	30	29	1	3.3	4	5	4	1	20.0	4	28	27	1	3.6	2	36
37	University of Michigan Medical School	25	24	1	4.2	9	16	15	1	6.3	5	9	9	0	0.0	7	7	7	0	0.0	2	37
38	University of Michigan Homeo. Med. School.—H.	13	12	1	7.7	5	10	9	1	10.0	3	3	3	0	0.0	3	9	9	0	0.0	2	38
	MINNESOTA																					
39	University of Minnesota Medical School	73	73	0	0.0	7	70	70	0	0.0	4	3	3	0	0.0	3	64	64	0	0.0	3	39
	MISSOURI																					
40	Kansas City College of Medicine and Surgery.—N.	35	33	2	5.7	3	35	33	2	5.7	3	0	0	0	0.0	0	32	30	2	6.2	2	40
41	Kansas City Univ. of Phys. and Surgs.—N.	9	8	1	11.1	7	9	8	1	11.1	7	0	0	0	0.0	0	9	8	1	11.1	7	41
42	St. Louis College of Physicians and Surgeons	38	30	8	21.1	10	34	28	6	17.6	6	4	2	2	50.0	4	20	16	4	20.0	4	42
43	St. Louis University School of Medicine	65	63	2	3.1	13	58	58	0	0.0	9	7	5	2	28.6	6	46	46	0	0.0	5	43
44	Washington University Medical School	66	64	2	3.0	17	57	57	0	0.0	12	9	7	2	22.2	7	51	51	0	0.0	8	44
	NEBRASKA																					
45	John A. Creighton Medical College	34	32	2	5.9	14	27	26	1	3.7	7	7	6	1	14.3	7	21	21	0	0.0	4	45
46	University of Nebraska College of Medicine	87	85	2	2.3	8	87	85	2	2.3	8	0	0	0	0.0	0	82	80	2	2.4	6	46
	NEW YORK																					
47	Albany Medical College	27	23	4	14.8	7	16	16	0	0.0	2	11	7	4	36.3	6	12	12	0	0.0	1	47
48	Columbia University College of Phys. and Surgs.	198	182	16	8.1	23	184	168	16	8.7	16	14	14	0	0.0	10	121	111	10	8.3	6	48
49	Cornell University Medical School	41	38	3	7.3	7	38	35	3	7.9	5	3	3	0	0.0	3	22	20	2	9.1	2	49
50	Fordham University School of Medicine	90	75	15	16.7	4	85	72	13	15.3	4	5	3	2	40.0	1	63	59	4	6.3	2	50
51	Long Island College Hospital	68	60	8	11.8	6	64	57	7	10.9	2	4	3	1	25.0	4	48	43	5	10.4	2	51
52	N. Y. Homeo. Med. Coll. and Flower Hosp.—H.	104	69	35	33.7	10	97	62	35	36.1	8	7	7	0	0.0	5	27	23	4	14.8	4	52
53	Syracuse University College of Medicine	26	26	0	0.0	4	25	25	0	0.0	3	1	1	0	0.0	1	23	23	0	0.0	2	53
54	University and Bellevue Hospital Med. Coll.	127	111	16	12.6	14	123	108	15	12.2	12	4	3	1	25.0	4	81	72	9	11.1	4	54
55	University of Buffalo Medical Department	53	53	0	0.0	6	48	48	0	0.0	4	5	5	0	0.0	4	38	38	0	0.0	2	55
	OHIO																					
56	Eclectic Medical College.—E.	41	35	6	14.6	10	37	32	5	13.5	7	4	3	1	25.0	4	31	31	0	0.0	4	56
57	Ohio State University College of Medicine	19	19	0	0.0	3	19	19	0	0.0	3	0	0	0	0.0	0	16	16	0	0.0	1	57
58	Ohio State University Coll. of Homeo. Med.—H.	13	12	1	7.7	4	13	12	1	7.7	4	0	0	0	0.0	0	10	10	0	0.0	2	58
59	University of Cincinnati College of Medicine	29	29	0	0.0	7	29	29	0	0.0	7	0	0	0	0.0	0	27	27	0	0.0	5	59
60	Western Reserve University School of Medicine	47	46	1	2.1	6	44	44	0	0.0	4	3	2	1	33.3	3	42	42	0	0.0	2	60
	OKLAHOMA																					
61	University of Oklahoma School of Medicine	23	21	2	8.7	8	23	21	2	8.7	8	0	0	0	0.0	0	13	13	0	0.0	2	61
	OREGON																					
62	University of Oregon Medical School	23	22	1	4.4	4	20	19	1	5.0	3	3	3	0	0.0	3	8	7	1	12.5	3	62
	PENNSYLVANIA																					
63	Hahnemann Medical College and Hospital.—H.	25	23	2	8.0	9	22	20	2	9.1	7	3	3	0	0.0	3	4	4	0	0.0	3	63
64	Jefferson Medical College	213	202	11	5.2	35	189	182	7	3.7	31	24	20	4	16.7	15	53	53	0	0.0	18	64
65	Temple University Department of Medicine	27	23	4	14.8	6	27	23	4	14.8	7	0	0	0	0.0	0	2	2	0	0.0	1	65
66	University of Pennsylvania School of Medicine	142	130	12	8.5	25	130	119	11	8.5	21	12	11	1	8.3	8	19	19	0	0.0	10	66
67	University of Pittsburgh School of Medicine	30	28	2	6.7	5	27	26	1	3.7	3	3	2	1	33.3	2	21	21	0	0.0	2	67
68	Woman's Medical College of Pennsylvania	15	14	1	6.7	6	9	8	1	11.1	3	6	6	0	0.0	4	2	2	0	0.0	2	68
	SOUTH CAROLINA																					
69	Medical College of the State of South Carolina	24	20	4	16.7	29	15	15	0	0.0	6	9	5	4	44.4	6	13	13	0	0.0	4	69

H. = Homeopathic; E. = Eclectic; N. = Nondescript.

Marginal Number	NAME OF COLLEGE	Graduates of All Years					Graduates of 1915-1919					Graduates of 1914 and Previous					Graduates of 1919					Marginal Number
		Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	
	TENNESSEE																					
70	Meharry Medical College	131	65	66	50.4	21	116	60	56	48.3	17	15	5	10	66.7	7	55	40	15	27.3	10	70
71	University of Tennessee College of Medicine	41	38	3	7.3	14	36	36	0	0.0	12	5	2	3	60.0	5	26	26	0	0.0	4	71
72	Univ. of West Tennessee Medical Department	7	3	4	57.1	3	5	3	2	25.0	3	2	0	2	100.0	2	4	3	1	25.0	2	72
73	Vanderbilt University School of Medicine	46	42	4	8.7	13	37	35	2	5.9	7	9	7	2	22.2	7	28	27	1	3.6	4	73
	TEXAS																					
74	Baylor University College of Medicine	22	20	2	9.1	4	22	20	2	9.1	4	0	0	0	0.0	0	21	20	1	4.8	3	74
75	University of Texas Department of Medicine	53	53	0	0.0	2	53	53	0	0.0	2	0	0	0	0.0	0	49	49	0	0.0	1	75
	VERMONT																					
76	University of Vermont College of Medicine	62	50	12	19.4	9	48	40	8	16.7	7	14	10	4	28.6	5	24	23	1	4.2	5	76
	VIRGINIA																					
77	Medical College of Virginia	60	38	22	35.6	14	54	36	18	33.3	12	6	2	4	66.7	5	21	20	1	4.8	4	77
78	University of Virginia Department of Medicine	32	32	0	0.0	9	29	29	0	0.0	8	3	3	0	0.0	3	18	18	0	0.0	6	78
	WISCONSIN																					
79	Marquette University School of Medicine	16	16	0	0.0	3	16	16	0	0.0	3	0	0	0	0.0	0	16	16	0	0.0	3	79
	CANADA																					
80	Dalhousie University Faculty of Medicine	3	3	0	0.0	3	2	2	0	0.0	2	1	1	0	0.0	1	0	0	0	0.0	0	80
81	Laval University Faculty of Medicine	6	2	4	66.7	3	4	2	2	50.0	2	2	0	2	100.0	2	1	1	0	0.0	1	81
82	McGill University Faculty of Medicine	26	20	6	23.1	13	19	13	6	31.6	8	7	7	0	0.0	6	4	4	0	0.0	4	82
83	Montreal School of Medicine and Surgery	2	0	2	100.0	2	1	0	1	100.0	1	1	0	1	100.0	1	1	0	1	100.0	1	83
84	Queen's University Faculty of Medicine	16	11	5	31.3	6	9	6	3	33.3	3	7	5	2	28.6	4	3	2	1	33.3	2	84
85	University of Manitoba, Manitoba Medical College	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	85
86	University of Toronto Faculty of Medicine	11	8	3	27.3	6	4	3	1	25.0	2	7	5	2	28.6	5	0	0	0	0.0	0	86
87	Western University Faculty of Medicine	7	5	2	28.6	4	0	0	0	0.0	0	7	5	2	28.6	4	0	0	0	0.0	0	87
88	Foreign Colleges	67	37	30	44.8	17	12	6	6	46.2	6	55	31	24	44.4	17	0	0	0	0.0	0	88
89	Miscellaneous Medical Colleges	340	210	130	38.2	44	90	64	26	28.9	29	250	146	104	41.4	39	2	2	0	0.0	2	89
90	Undergraduates and Osteopaths	66	35	31	47.0	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	90
91	Totals by States	4736	4060	676	14.3	....	3904	3495	409	10.5	....	766	530	236	30.8	....	2422	2321	101	4.2	....	91

(CONTINUED FROM PAGE 1083)

practical examinations by which they may show their skill in diagnosis and treatment, for a wider provision for reciprocity and for special percentage allowances for years of active practice. The total number of these candidates is diminishing each year as state licensing boards extend the provision for reciprocity, or for the endorsement, without further examination of licenses granted by other states where a physician's qualifications are otherwise satisfactory. As a rule, the states which do not have reciprocal relations with other states (Florida, Massachusetts, Montana and Oregon, see Table G) examined the largest numbers of old practitioners.

Graduates of 1919 Examined During 1919

Table C also gives the results for the graduates of 1919 who were examined during the year by the state boards, and shows that 2,422, or 51.1 per cent., of all candidates examined during the year, graduated in 1919, including nine who graduated from Canadian medical colleges. Educational statistics show that the medical colleges of the United States graduated 2,656 students last year (including 252 for whom diplomas were withheld until a year's internship in a hospital has been completed); therefore, 90.8 per cent. of all graduates in 1919 took examinations for license during that year. In some of the states, graduates in medicine are allowed to serve as hospital interns without first becoming licensed practitioners, which accounts for some of the remaining 9.2 per cent. Of the 1919 graduates examined, 101, or 4.2 per cent., failed, as compared with 5.5 per cent. in 1918, 5.7 per cent. in 1917; 7.4 per cent. in 1916 and 7.5 per cent. in 1915. A steady improvement in recent years in the qualifications of medical graduates is apparent from these figures.

Nonrecognition of Medical Colleges

Table D shows for each college, from official reports, the states in which its diplomas are not given unqualified recognition. Nonrecognition is expressed by different terms in different states. Some boards list colleges as "not in good standing;" some give them as "not reputable;" in New York full recognition is given only to colleges which are "registered," and in Michigan colleges are divided into groups, only those of Group 1 having full recognition. This table also shows the latest rating given to each college by the Council on Medical Education.

From the point of view of the prospective student who may be selecting a medical college, the facts in Table D are of extreme importance. There are 59 medical colleges now having complete recognition in all states. There are others for which the few instances of nonrecognition are due to certain technicalities in state board requirements. If the student gets his medical training in one of the remaining 18 colleges, he will find on graduation that his diploma is not recognized in from 7 to 42 states!

Without the information published in Table D, these state board statistics would be not merely incomplete—they would be actually misleading. For example, 35 graduates of the Kansas City (Mo.) College of Medicine and Surgery were examined in 1919. Of these, 33 (94 per cent.) were examined by the Arkansas Board of Eclectic Medical Examiners and all but one passed. The statistics show only 5.7 per cent of failures, which would make this college appear to belong among the better grade medical schools of the country. Quite different the picture, however, when the facts are known, as set forth in Table D, that this college is reported as not recognized in its home state and in 36 other states, and that for its very existence it depends on the acceptance of its graduates by the Eclectic Board of Arkansas! The figures obtained for the last several years indicate that neither the Kansas City College of Medicine and Surgery nor the Arkansas Eclectic Board could exist without the other.

During the seven years this table has been published, the percentages of fully recognized colleges were, respectively, 20.0, 32.3, 43.7, 65.6, 57.3, 61.3 and 67.8. This shows a decided improvement in the medical colleges, Forty-two state licensing boards, to some extent at least, are now utilizing their legal power to refuse recognition to medical colleges which do not meet the requirements in the respective states. In the other eight states, however (including Alaska and the District of Columbia), this table indicates either that the practice acts do not give the boards authority to enforce a requirement of reasonable standards, or else that the boards are not exercising that authority. It is evident that if the graduates of low standard medical colleges are not eligible for license in the majority of states, they will flock to the other eight which still grant them recognition. These eight states—Alaska, Arizona, Massachusetts, Nebraska, Nevada, Oregon, Utah and the District of Columbia, therefore, will

(CONTINUED ON PAGE 1094)

TABLE D.—NONRECOGNITION OF MEDICAL COLLEGES

This table, based on official reports, shows in what states diplomas granted by certain medical colleges are not recognized as an acceptable qualification for the license to practice medicine.

Colleges marked (x) have been reported as not recognized by the states in the columns of which the letter appears

| Marginal Number | COLLEGE | Classification by Council on Medical Education† | 1 Alabama | 2 Alaska | 3 Arizona | 4 Arkansas | 5 California | 6 Colorado | 7 Connecticut | 8 Delaware | 9 Dist. of Columbia | 10 Florida | 11 Georgia | 12 Idaho | 13 Illinois | 14 Indiana | 15 Iowa | 16 Kansas | 17 Kentucky | 18 Louisiana | 19 Maine | 20 Maryland | 21 Massachusetts | 22 Michigan | 23 Minnesota | 24 Mississippi | 25 Missouri | 26 Montana | 27 Nebraska | 28 Nevada | 29 New Hampshire | 30 New Jersey | 31 New Mexico | 32 New York | 33 North Carolina | 34 North Dakota | 35 Ohio | 36 Oklahoma | 37 Oregon | 38 Pennsylvania | 39 Rhode Island | 40 South Carolina | 41 South Dakota | 42 Tennessee | 43 Texas | 44 Utah | 45 Vermont | 46 Virginia | 47 Washington | 48 West Virginia | 49 Wisconsin | 50 Wyoming | Reported Non-Recognition by State Licensing Boards: No. of State Boards reporting full recognition | No. of State Boards reporting college not recognized | Percentage of State Boards reporting full recognition | Marginal Number |
|---|---|---

| | | |

(CONTINUED FROM PAGE 1091)

remain the dumping ground for the output of low grade medical colleges, until the licensing boards obtain the needed legal authority, and until they take action in the matter. Arkansas, Florida and Connecticut are also registering through their separate sectarian licensing boards graduates of medical colleges not recognized in the majority of other states. It is reported that no examinations were held during the year by the Arkansas Homeopathic Board, and from the Florida Eclectic Board no report was received.

TABLE 1.—RECOGNITION OF MEDICAL COLLEGES (BASED ON TABLE D)

	Number of Colleges
Recognized by all state boards	59
Not recognized by 1 or 2 state boards	10
Not recognized by 7 to 17 state boards	9
Not recognized by 37 to 42 state boards	9
Total	87

STUDY OF TOTALS AND PERCENTAGES

A study of totals and percentages as compared with previous years is of interest. The number examined in 1919 was 1,099 more than in 1918; six more than in 1917; 114 less than in 1916, and 1,577 less than in 1915. Statistics regarding physicians licensed in the various states by reciprocity and by other methods are given in Tables G, H, I, J and K. By all methods—examination, reciprocity, under exemption, etc.—6,584 physicians were licensed during 1919, or 2,399 more than in 1918, 1,161 more than in 1917, 1,712 more than in 1916, but 1,281 less than in 1906, when 7,865 physicians were licensed.

Other deductions from the larger tables, presented in Tables E and F, are worthy of special study.

TABLE 2.—RESULTS FOR THIS AND PREVIOUS YEARS

Year	All Candidates Examined				Recent Graduates		Older Graduates		Nondescript		Registered without Written Examination	Total Registered
	Examined	Passed	Failed	Percentage Failed	Examined	Percentage Failed	Examined	Percentage Failed	Examined	Percentage Failed		
1904	7035	5672	1363	19.3	4773	14.1	579	29.7	515	52.6	999	6671
1905	7170	5680	1490	20.8	6054	16.2	690	37.7	472	61.9	394	6074
1906	8035	6368	1667	20.7	6250	16.4	793	27.1	703	51.3	1497	7865
1907	7271	5723	1548	21.3	5922	15.1	675	27.7	674	69.6	1426	7149
1908	7770	6084	1686	21.7	6477	17.8	796	31.5	494	56.8	1276	7360
1909	7287	5857	1430	19.6	5891	15.4	958	30.0	438	54.1	1373	7230
1910	7004	5712	1292	18.4	5678	14.9	973	29.1	353	45.6	1640	7352
1911	6960	5578	1382	19.9	5685	17.2	945	29.4	330	38.5	1246	6824
1912	6879	5466	1413	20.5	5770	18.6	856	29.2	253	34.8	1257	6723
1913	6435	5236	1199	18.6	5390	16.5	225	32.1	251	37.8	1265	6501
1914	5570	4370	1200	21.6	4549	17.6	728	30.0	293	61.4	1427	5797
1915	5313	4486	827	15.6	4627	13.2	621	29.3	65	49.2	1386	5872
1916	4850	4123	727	15.0	4283	12.7	567	32.1	.....	.....	1338	5461
1917	4730	4061	669	14.1	4015	10.1	564	32.6	.....	.....	1362	5423
1918	3637	3154	483	13.3	2984	9.3	479	30.5	.....	.....	1031	4185
1919	4736	4060	676	14.3	3904	10.5	766	30.8	66	47.0	2521	6584

TABLE E.—COLLEGES HAVING FORTY OR MORE EXAMINED

COLLEGE	Graduates of All Years					Graduates of 1915–1919					Graduates of 1914 and Previous					Graduates of 1919					Marginal No., Table A
	No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	
Jefferson Medical College	213	202	11	5.2	35	189	182	7	3.7	31	24	20	4	16.7	15	53	53	0	0.0	18	64
Columbia University College of Phys. and Surgs.	198	182	16	8.1	23	184	168	16	8.7	16	14	14	0	0.0	10	121	111	10	8.3	6	48
Rush Medical College (University of Chicago)	183	180	3	1.6	20	168	168	0	0.0	13	15	12	3	20.0	7	145	145	0	0.0	13	20
Medical School of Harvard University	164	159	5	3.0	25	148	145	3	2.1	23	16	14	2	12.5	7	88	88	0	0.0	11	33
Loyola University School of Medicine	153	124	29	19.0	30	133	114	19	14.4	23	20	10	10	50.0	11	72	69	3	4.2	9	18
Johns Hopkins University Medical Department	142	137	5	3.5	26	124	119	5	4.0	21	18	18	0	0.0	12	64	64	0	0.0	13	29
University of Pennsylvania School of Medicine	142	130	12	8.5	25	130	119	11	8.5	21	12	11	1	8.3	8	19	19	0	0.0	10	66
Tufts College Medical School	139	120	19	13.7	13	130	112	18	13.6	10	9	8	1	11.1	6	95	87	8	8.4	8	35
Meharry Medical College	131	65	66	50.4	21	116	60	56	48.3	17	15	5	10	66.7	7	55	40	15	27.3	10	70
University and Bellevue Hospital Med. College	127	111	16	12.6	14	123	108	15	12.2	12	4	3	1	25.0	4	81	72	9	11.1	4	54
Univ. of Md. Sch. of Med. and Coll. of P. & S.	122	112	10	8.2	22	116	106	10	8.6	21	6	6	0	0.0	6	39	39	0	0.0	9	30
Northwestern University Medical School	111	107	4	3.6	15	98	96	2	2.0	9	13	11	2	15.4	10	86	85	1	1.2	3	19
University of Illinois College of Medicine	108	104	4	3.7	20	89	88	1	1.1	10	19	16	3	15.8	12	80	79	1	1.2	7	21
New York Homeo. Med. Coll. and Flower Hosp.	104	69	35	33.7	10	97	62	35	36.1	8	7	7	0	0.0	5	27	23	4	14.8	4	52
Tulane Univ. of Louisiana School of Medicine	95	94	1	1.1	16	88	87	1	1.1	12	7	7	0	0.0	6	74	74	0	0.0	9	27
Fordham University School of Medicine	90	75	15	16.7	4	85	72	13	15.3	4	5	3	2	40.0	1	63	59	4	6.3	2	50
University of Nebraska College of Medicine	87	85	2	2.3	8	87	85	2	2.3	8	0	0	0	0.0	0	82	80	2	2.4	6	46
University of Minnesota Medical School	73	73	0	0.0	7	70	70	0	0.0	4	3	3	0	0.0	3	64	64	0	0.0	3	39
Long Island College Hospital	68	60	8	11.8	6	64	57	7	10.9	2	4	3	1	25.0	4	48	43	5	10.4	2	51
Washington University Medical School	66	64	2	3.0	17	57	57	0	0.0	12	9	7	2	22.2	7	51	51	0	0.0	8	44
St. Louis University School of Medicine	65	63	2	3.1	13	58	58	0	0.0	9	7	5	2	28.6	6	46	46	0	0.0	5	43
Chicago Medical School	62	34	28	45.2	7	62	34	28	45.2	7	0	0	0	0.0	0	10	3	7	70.0	2	16
University of Vermont College of Medicine	62	50	12	19.4	9	48	40	8	16.7	7	14	10	4	28.6	5	24	23	1	4.2	5	76
Medical College of Virginia	59	38	21	35.6	14	53	35	18	34.0	12	6	2	4	66.7	5	21	20	1	4.8	4	77
University of Texas Department of Medicine	53	53	0	0.0	2	53	53	0	0.0	2	0	0	0	0.0	0	49	49	0	0.0	1	75
University of Buffalo Medical Department	53	53	0	0.0	6	48	48	0	0.0	4	5	5	0	0.0	4	38	38	0	0.0	2	55
Emory University School of Medicine	50	42	8	16.0	10	38	35	3	7.7	6	12	7	5	41.7	8	27	27	0	0.0	3	14
State University of Iowa College of Medicine	47	47	0	0.0	4	45	45	0	0.0	2	2	2	0	0.0	2	43	43	0	0.0	1	23
Western Reserve University School of Medicine	47	46	1	2.1	6	44	44	0	0.0	4	3	2	1	33.3	3	42	42	0	0.0	2	60
University of Louisville Medical Department	46	30	16	34.8	14	26	22	4	15.4	5	20	8	12	60.0	11	17	15	2	11.8	4	26
Vanderbilt University School of Medicine	46	42	4	8.7	13	37	35	2	5.9	7	9	7	2	22.2	7	28	27	1	3.6	4	73
Cornell University Medical College	41	38	3	7.3	7	38	35	3	7.9	5	3	3	0	0.0	3	22	20	2	9.1	2	49
Eclectic Medical College	41	35	6	14.6	10	37	32	5	13.5	7	4	3	1	25.0	4	31	31	0	0.0	4	56
University of Tennessee College of Medicine	41	38	3	7.3	13	36	36	0	0.0	12	5	2	3	50.0	5	26	26	0	0.0	4	71
Totals	3229	2862	367	11.4	....	2919	2627	292	10.0	....	310	234	76	24.5	....	831	755	76	9.1		

This table is interesting, since it gives data relating to the 34 larger medical colleges arranged according to the number of graduates examined. This allows of comparison between colleges having classes of nearly equal size. Jefferson Medical College had the largest number of graduates examined in 1919. The position was held by the Chicago College of Medicine and Surgery in 1913 to 1918, inclusive, by the University of Illinois College of Medicine in 1906, 1907 and 1912; in 1908 by Jefferson Medical College, and in 1909, 1910 and 1911 by the University of Louisville Medical Department. The first place from the standpoint of the number examined, however, does not always mean first place from the standpoint of scholarship. Note the percentages of failures. The five highest failure percentages are for Meharry Medical College, 50.4; Chicago Medical School (formerly Chicago Hospital College of Medicine), 45.2; Medical College of Virginia, 35.6; University of Louisville Medical Department, 34.8, and the New York Homeopathic Medical College and Flower Hospital, 33.7.

Of the 14 colleges having 100 or more examined, eight have failure percentages of less than 10, while six stand out prominently with large failure percentages. Of the 20 colleges having between 40 and 100 graduates examined, 12 had failure percentages of less than 10, 15 had failure percentages between 10 and 20, and 3 had failure percentages of over 20 per cent.

The average percentage of failures for these larger colleges for graduates of 1914 and previous years was 24.5; for graduates of 1915 to 1919, inclusive (recent graduates), 10.0; for graduates of 1919, 9.1 and for graduates of all years, 11.4. Of the 4,258 graduates of the 82 colleges in the United States which had graduates examined by state boards in 1919, these larger (41.5 per cent. of all) schools furnished 3,229, or 75.6 per cent., of the graduates examined.

STUDY OF LARGER COLLEGES

Table E is also based on the three large tables, and gives the results of state board examinations as they affect the thirty-four largest medical colleges. Although these colleges represent 41.5 per cent. of the eighty-two medical colleges in the United States having graduates examined, in 1919 they furnished 75.6 per cent. of all candidates for license coming from medical schools of the United States. This table shows, also, that the graduating of large classes by a medical college does not prove excellence of teaching, since five of these have high failure percentages. The larger the college from the standpoint of students and graduates, the more serious is inferior teaching ability, as indicated by a high failure percentage. In fairness both to medical students and to the public, such schools should strengthen their teaching facilities or reduce the size of their classes.

TABLE F.—PHYSICIANS EXAMINED BY STATE BOARDS, 1915 TO 1919, INCLUSIVE

	1915		1916		1917		1918		1919		Totals			
	Registered	Rejected	Registered	Rejected	Registered	Rejected	Registered	Rejected	Registered	Rejected	Examined	Registered	Rejected	Percentage Rejected
Alabama	79	45	55	36	45	21	20	9	23	12	345	222	123	35.7
Arizona	10	7	33	9	32	5	33	8	48	5	190	156	34	17.9
Arkansas	75	7	67	11	80	12	68	4	70	7	401	360	41	10 2
California	137	39	146	8	235	94	203	71	109	56	1098	830	268	24.4
Colorado	19	5	25	8	38	2	44	10	57	16	224	183	41	18.3
Connecticut	46	17	41	20	72	22	39	14	94	24	389	292	97	24.9
Delaware	13	0	13	2	14	0	10	1	19	1	73	69	4	5.5
Dist. of Columbia	51	13	33	14	26	7	37	4	51	6	242	198	44	18.2
Florida	83	25	68	18	44	12	21	8	64	17	360	280	80	22.2
Georgia	176	17	133	7	100	2	48	2	60	5	550	517	33	6.0
Idaho	23	1	29	0	20	2	16	0	31	0	122	119	3	2.5
Illinois	439	64	517	91	487	101	367	57	475	96	2694	2285	409	15.2
Indiana	49	3	49	4	39	2	43	6	34	0	229	214	15	6.6
Iowa	85	4	82	2	45	1	50	1	78	4	352	340	12	3.4
Kansas	29	4	32	1	24	3	20	0	32	3	148	137	11	7.4
Kentucky	83	7	66	10	68	16	40	2	31	7	330	288	42	12.7
Louisiana	69	21	68	10	44	13	50	6	80	6	367	311	56	15.2
Maine	63	6	25	2	33	1	27	3	43	3	206	191	15	7.3
Maryland	111	29	96	30	82	11	54	5	145	11	574	488	86	15.0
Massachusetts	238	65	166	40	219	42	228	18	305	41	1302	1156	206	15.1
Michigan	120	6	135	5	125	3	97	4	52	0	547	529	18	3.3
Minnesota	59	6	56	1	60	0	68	0	98	0	348	341	7	2.0
Mississippi	84	15	48	29	23	5	12	0	18	3	237	185	52	21.9
Missouri	200	22	161	13	166	12	143	21	136	1	875	806	69	7.9
Montana	48	16	38	14	43	24	20	7	26	12	248	175	73	29.4
Nebraska	70	6	52	0	63	0	44	1	102	5	343	331	12	3.5
Nevada	12	1	10	1	8	0	5	1	13	0	51	48	3	5.9
New Hampshire	6	1	10	0	6	0	4	2	5	0	34	31	3	8.8
New Jersey	71	8	72	10	26	6	16	1	61	1	272	246	26	9.6
New Mexico	5	0	5	1	...	...	2	0	2	0	15	14	1	6.7
New York	618	165	523	159	600	146	456	117	627	189	3600	2824	776	21.6
North Carolina	106	30	96	18	65	10	49	3	50	9	445	375	70	15.7
North Dakota	10	5	15	5	6	1	6	3	6	4	61	43	18	29.5
Ohio	149	3	182	5	185	4	142	6	156	8	840	814	26	3.1
Oklahoma	50	13	52	8	52	2	24	0	34	0	235	212	23	9 8
Oregon	56	30	38	17	37	7	35	7	39	3	269	205	64	23.8
Pennsylvania	208	24	233	33	241	12	168	22	213	28	1182	1063	119	10.1
Rhode Island	26	6	27	7	22	1	13	4	20	5	131	108	23	17.6
South Carolina	53	36	53	24	37	29	17	12	45	14	330	205	115	35.9
South Dakota	25	0	18	2	18	1	14	0	20	1	99	95	4	4 0
Tennessee	101	4	128	20	167	10	103	19	96	7	655	595	60	9.2
Texas	136	11	90	13	119	5	82	2	89	3	550	516	34	6.2
Utah	21	1	15	0	11	0	10	1	29	0	88	86	2	2.3
Vermont	36	0	17	0	13	1	24	0	22	0	113	112	1	0.9
Virginia	100	8	99	8	64	4	50	6	65	12	416	378	38	9.1
Washington	75	14	48	4	57	7	59	7	63	10	344	302	42	12.2
West Virginia	70	7	58	2	45	7	16	4	35	15	259	224	35	13.5
Wisconsin	74	10	72	4	40	3	34	2	34	0	273	254	19	7.0
Wyoming	13	0	17	0	13	0	22	2	19	8	94	84	10	10.6
U. S. Territories and Possessions	6	0	11	1	2	0	1	0	27	18	66	47	19	28.8
Totals	5,313		4,850		4,730		3,637		4,736		23,266			
Registered	4,486		4,123		4,061		3,154		4,060		19,884			
Rejected	827		727		669		483		676		3,382			
Per Cent. Rejected	15.6		15.0		14.1		13.2		14.3		14.5			

This table gives the number of candidates registered and rejected *on examination* by each state during each of the last five years. The last four columns give the totals for the five years and the percentage rejected by each state. Compare this table with Table H.

Four states registered over 1,000 candidates by examination in the five years, these being New York, Illinois, Massachusetts and Pennsylvania. Over 2,000 were registered in only two states, New York with 2,824 and Illinois with 2,285. Altogether 19,884 physicians were registered by examination in five years, an average of 3,977 each year.

The five highest percentages of rejections for the five years were in South Carolina, 35.9; Alabama, 35.7; North Dakota, 29.5; Montana, 29.4; Connecticut, 24.9, and California, 24.4. Until 1916 Massachusetts, Oregon and Tennessee included nongraduates among those examined, and for that reason would be expected to have higher percentages rejected. On the other hand, in several states the boards refused to recognize certain colleges and eliminated many candidates prior to the examination by a careful scrutiny of credentials, and as a result the percentages of failures at the examinations are lower than otherwise would be the case. For example, Ohio rejected only 3.1 per cent. of those who took their examinations, but graduates of eleven medical colleges are not eligible for admission to the examinations. This table therefore should be studied in connection with Table D.

The lowest failure percentages were in Vermont, 0.9; Minnesota, 2.0; Washington, 2.3; Idaho, 2.5; Ohio, 3.1, and Michigan, 3.3.

TABLE G.—REGISTRATION BY STATE BOARDS DURING THE YEAR 1919

STATES	By Examination			By Reciprocity	Without Written Examination or Under Exemption	Total Registered
	Graduates, 1915-1919	Graduates, 1914 and Previous	Nongraduates and graduates of Nondescript Colleges			
Alabama	20	3	....	32	....	55
Arizona	11	36	1	....	....	48
Arkansas	54	16	....	60	....	130
California	83	13	13	336	....	445
Colorado	32	9	16	84	....	141
Connecticut	80	14	....	11	2	107
Delaware	19	0	....	9	....	28
District of Columbia	46	5	....	15	....	66
Florida	19	45	....	....	....	64
Georgia	56	4	....	51	....	111
Idaho	16	15	....	18	....	49
Illinois	453	22	....	93	....	568
Indiana	31	3	....	31	....	65
Iowa	71	7	....	71	....	149
Kansas	28	4	....	57	....	89
Kentucky	27	4	....	36	1	68
Louisiana	64	16	....	18	....	98
Maine	35	8	....	8	....	51
Maryland	140	5	....	33	1	179
Massachusetts	248	57	....	....	....	305
Michigan	45	7	....	130	....	182
Minnesota	89	9	....	81	....	179
Mississippi	16	2	....	28	....	46
Missouri	117	19	....	96	....	232
Montana	10	16	....	....	....	26
Nebraska	102	0	....	65	....	167
Nevada	9	4	....	10	....	23
New Hampshire	4	0	1	13	....	18
New Jersey	55	6	....	202	....	263
New Mexico	2	0	....	3	45	50
New York	592	35	....	69	15	711
North Carolina	59	0	....	23	....	82
North Dakota	5	1	....	11	1	18
Ohio	148	8	....	128	....	284
Oklahoma	28	6	....	82	....	116
Oregon	24	15	....	....	....	39
Pennsylvania	195	18	....	56	....	269
Rhode Island	11	9	....	....	....	20
South Carolina	37	8	....	....	....	45
South Dakota	5	15	....	....	....	20
Tennessee	95	0	1	27	....	123
Texas	35	3	1	186	....	275
Utah	28	1	....	25	....	54
Vermont	21	1	....	2	....	24
Virginia	59	6	....	62	....	127
Washington	27	34	2	42	....	105
West Virginia	31	4	....	41	....	76
Wisconsin	31	3	....	98	....	152
Wyoming	13	6	....	16	....	35
U. S. Territories and Possessions	19	8	....	....	....	27
Totals	3,495	530	35	2,459	65	6,584

This table shows the total number registered during 1919 in each state by the various methods. The first three columns show those registered by examination; the first column showing the recent graduates registered, the second column the old practitioners (graduates of 1914 and previous years) and the third column shows a few nongraduates, graduates of nondescript colleges and some osteopaths who were given licenses as physicians and surgeons. The fourth column shows the number licensed through reciprocity, by endorsement of other state licenses and by certificates of the National Board of Medical Examiners. The fifth column shows those licensed under various exemption clauses in the practice acts, such as because of national fame or by recognition of diplomas (New Mexico). California licensed as physicians 13 out of 28 graduates of osteopathic colleges, and Colorado so licensed 14 out of 25 osteopaths.

It is interesting to note that states like Arizona, Florida, Massachusetts and New York, which have no reciprocal relations or which reciprocate with only a few other states, have registered by examination the largest numbers of old practitioners. The large registration through reciprocity in California is due to the liberal provision in the recent medical practice act providing for the recognition of licenses granted in other states. No reciprocal registrations were reported for eight states.

The last column shows the total number of physicians registered by all methods in each state during the year. Four states registered over 300 each, these being New York, 711; Illinois, 568; California, 445, and Massachusetts, 305. Thirteen states registered less than 50 each. The largest registration was in New York, and the smallest number was 18 each in New Hampshire and North Dakota. The total registered by all methods was 6,584, an increase of 2,399 above the total registered in 1918. Of this increase, 1,487, or 59.5 per cent., were through reciprocal registration.

TOTALS EXAMINED IN FIVE YEARS

Table F shows the number registered and the number rejected in each state for each of the past five years. A comparison of this table with the statistics in the last educational number of THE JOURNAL (Aug. 16, 1919, p. 513, Table 12) shows—what would be expected—that the states having the several largest numbers of medical graduates, examined the largest numbers of physicians. New York leads, having examined 3,600 candidates in five years, followed by Illinois with 2,694. The five states having the next highest numbers are Massachusetts with 1,362, Pennsylvania with 1,182, California with 1,098, Missouri with 875 and Ohio with 840.

TABLE H.—REGISTRATIONS BY STATE BOARDS FOR FIVE YEARS

STATE	1915	1916	1917	1918	1919	Totals
Alabama	79	55	48	26	55	263
Arizona	13	33	32	33	48	159
Arkansas	98	95	111	81	130	515
California	312	302	440	342	445	1,841
Colorado	82	86	100	97	141	506
Connecticut	55	58	84	46	107	350
Delaware	21	19	17	24	28	109
Dist. of Columbia	53	44	33	41	66	237
Florida	83	68	44	21	64	280
Georgia	109	152	122	72	111	656
Idaho	26	33	25	31	49	164
Illinois	485	556	520	392	568	2,521
Indiana	91	77	79	58	65	370
Iowa	150	103	91	79	149	572
Kansas	83	95	67	56	89	390
Kentucky	103	75	76	54	68	376
Louisiana	77	77	51	57	98	360
Maine	69	31	42	32	51	225
Maryland	142	120	100	73	179	614
Massachusetts	238	166	219	228	305	1,156
Michigan	186	224	198	145	182	935
Minnesota	104	101	103	97	179	584
Mississippi	87	58	37	15	46	243
Missouri	263	212	206	186	232	1,099
Montana	48	39	43	20	26	176
Nebraska	111	70	99	77	167	524
Nevada	23	29	24	16	22	114
New Hampshire	26	25	18	7	18	94
New Jersey	157	163	122	101	263	806
New Mexico	53	63	67	33	50	266
New York	657	545	635	496	711	3,044
North Carolina	140	113	86	67	82	488
North Dakota	27	35	24	11	18	115
Ohio	221	251	245	175	285	1,177
Oklahoma	114	107	142	73	116	552
Oregon	56	38	37	35	39	205
Pennsylvania	219	252	258	172	269	1,170
Rhode Island	26	27	22	13	20	108
South Carolina	53	53	37	17	45	205
South Dakota	32	18	24	14	20	108
Tennessee	114	142	107	114	123	660
Texas	169	166	176	149	275	935
Utah	29	23	20	23	54	149
Vermont	37	23	13	25	24	122
Virginia	143	131	82	78	127	561
Washington	75	48	57	59	105	344
West Virginia	98	90	84	41	76	389
Wisconsin	126	127	67	54	148	522
Wyoming	13	32	27	28	19	119
U. S. Possessions	6	11	2	1	27	47
Totals	5,872	5,461	5,423	4,185	6,584	27,525

This table shows the totals registered in each state during each of the last five years. In some states it will be noted that there has been a gradual decrease during the first four years and a large increase in 1919. In others this increase has not been so large. The totals also are given for the entire five years. It will be noted that seven states registered over 1,000 physicians, the largest number being in New York with 3,044 followed by Illinois with 2,521, California with 1,841, Ohio with 1,177, Pennsylvania with 1,170, Massachusetts with 1,156 and Missouri with 1,099. Omitting the outlying territories the lowest registration during the five years was in New Hampshire, where only 94 physicians were registered, followed by Rhode Island and South Dakota each having 108, Delaware with 109, Nevada with 114, North Dakota with 115 and Wyoming with 119.

In the five years there were altogether 27,525 registrations, an average of 5,505 each year.

TOTAL REGISTRATION IN 1919

The tables thus far described have referred only to the results of *examinations* and to those registered on that basis. Table G, however, shows the total number who received licenses in each state, including those registered by examination, by reciprocity and under various exemption clauses. Altogether 6,584 physicians were registered by all methods during 1919, as compared with 4,185 in 1918, 5,423 in 1917, 5,461 in 1916, 5,872 in 1915 and 5,797 in 1914. The total registered in 1918—4,185—was the lowest number registered in any year since the publication of these statistics was begun. This was undoubtedly due to the war. This year the total is increased by 2,399 and is the largest number since 1912. Of the increase, 1,487, or 59.5 per cent., were reciprocal registrations.

By reciprocity or under exemption clauses, 2,524 were licensed in 1919 as compared with 1,031 in 1918, 1,362 in 1917, 1,338 in 1916 and 1,386 in 1915.

Over 100 were registered by all methods in twenty-three states; over 200 in nine, and over 300 in four, the largest numbers registered being 711 in New York, 568 in Illinois, 445 in California and 305 in Massachusetts. Of those licensed in California 336, or 75.5 per cent., were registered by the endorsement of licenses granted by the boards of other states. California also registered as physicians and surgeons 13 graduates of osteopathic colleges. Fourteen osteopaths were so licensed in Colorado, 2 in Washington and one each in New Hampshire and Texas. Texas also registered 36 osteopaths by reciprocity.

TOTAL REGISTRATION IN FIVE YEARS

Table H permits the reader to compare the registrations in each state for the last 5 years. There was a decrease from 1915 until 1918. The decrease of 1,238 in 1918 was due undoubtedly to war conditions. A rebound is seen, however, in 1919, when there was an increase of 2,399. It is interesting to compare the registrations in different states. For example, in 1918 Massachusetts had an increase in the number of registrations regardless of the general decrease in the majority of states. Massachusetts was one of the states which also in 1919 showed an increase beyond what would be expected by the general increase. Since Massachusetts does not have reciprocal relations with other states, this increase is apparently due to the faulty medical practice act in that state, where the board is not given authority to refuse recognition to low grade medical colleges and cannot insist on reasonable standards of preliminary education. Attention is called also to the figures in 1919 for Arkansas, California, Connecticut, Minnesota, Nebraska, Texas, Wisconsin and Washington, in which states the registrations are larger than would be expected with the general increase in registrations. In California and Texas this seems to be due to the unusually generous provision for or the administration of reciprocity. In Arkansas and Connecticut, although the regular medical boards exact fairly high qualifications, there are generous sectarian boards which are not so particular. In Nebraska, only a high school education is required as the minimum standard of preliminary education. In Minnesota and Wisconsin, during 1919 generous provision was made for registering, without further examination, physicians who had been in the government medical services.

On the other hand, it will be noted that in several states, registrations in 1919 are less than in 1918 or are much smaller than would be expected with the general increase in registrations. In Vermont, there was a lower registration than in 1918, while in Indiana, Kentucky, Montana, New Hampshire, North Dakota and Oregon, the registrations are smaller than would be expected. It will be noted meanwhile that New Hampshire had the lowest number registered in the five years, while the largest number registered was in New York. This table would be interesting in connection with a study of the distribution of physicians in the United States.

MEDICAL TRAINING OF APPLICANTS LICENSED IN 1918

Table I is of special interest, since it shows for each state the numbers of candidates coming from medical schools rated in classes A, B and C, thereby indicating the character of the medical training of the candidates licensed during 1918. Of the 6,584 candidates registered, 4,060 were licensed by examination and 2,524 by reciprocity or on presentation of acceptable credentials. Those who graduated prior to 1907, when the first classification of medical colleges was completed by the Council on Medical Education, are included among those graduating from "Miscellaneous Col-

leges." Among the graduates of Class C schools are included 31 graduates of osteopathic colleges who were licensed as physicians in California, Colorado, Washington, New Hampshire and Texas. The Texas totals of Class C candidates would be increased if the 36 osteopaths who were licensed by reciprocity received licenses as physicians. Altogether, of the 6,584 candidates registered in 1919, 4,368, or 66.4 per cent., were graduates of Class A medical schools; 872, or 13.2 per cent., were from Class B schools; 278, or 4.2 per cent., were from Class C schools, and for 1,066, or 16.2 per cent., the colleges are unclassified.

As will be noted, the largest numbers of Class C graduates were licensed in Illinois with 38; Arkansas, with 33; Colorado, with 30, and California and Tennessee each with 23. All of the Class C graduates registered in Arkansas were licensed by the Eclectic Board.

Illinois registered 129 Class B graduates, the largest number, followed by California, with 69; New York, with 66; Ohio with 51 and Oklahoma with 45. Oklahoma and Tennessee licensed more graduates of Class B and Class C colleges than of Class A graduates.

Only Class A graduates were registered either by examination or by reciprocity in Mississippi, South Carolina and Vermont.

It is evident that in several states, particularly, more care should be taken in the recognition of medical colleges, or better methods of examination should be adopted which will provide better safeguards against those not having adequate education.

Source of Candidates Registered in Three Years

Of the 6,584 physicians registered by all methods in 1919, 4,368, or 66.4 per cent., graduated from Class A medical colleges; 872, or 13.2 per cent., were from Class B medical colleges; and 278, or 4.2 per cent., were from Class C medical colleges. Of all candidates examined, 1,066, or 16.2 per

TABLE I.—CHARACTER OF PHYSICIANS LICENSED IN 1919

Marginal Number	STATES	By Examination					On Reciprocity or Credentials					Totals Registered from Medical Colleges in Class					Marginal Number
		Medical Colleges in Class				Totals	Medical Colleges in Class				Totals					Grand Totals	
		A	B	C	Misc.		A	B	C	Misc.		A	B	C	Misc.		
1	Alabama	16	6	0	1	23	21	7	0	4	32	37	13	0	5	55	1
2	Arizona	13	10	2	23	48	0	0	0	0	0	13	10	2	23	48	2
3	Arkansas	12	13	33[1]	12	70	19	21	0	20	60	31	34	33[1]	32	130	3
4	California	43	33	19[2]	14	109	111	36	11	178	336	154	69	30[2]	192	445	4
5	Colorado	30	2	22[3]	3	57	26	11	1	46	84	56	13	23[3]	49	141	5
6	Connecticut	86	5	0	3	94	3	2	2	6	13	89	7	2	9	107	6
7	Delaware	13	6	0	0	19	8	0	0	1	9	21	6	0	1	28	7
8	District of Columbia	49	1	1	0	51	6	1	1	7	15	55	2	2	7	66	8
9	Florida	31	5	3	25	64	0	0	0	0	0	31	5	3	25	64	9
10	Georgia	49	9	0	2	60	31	9	1	10	51	80	18	1	12	111	10
11	Idaho	17	3	2	9	31	8	2	0	8	18	25	5	2	17	49	11
12	Illinois	317	117	31	10	475	59	12	7	15	93	376	129	38	25	568	12
13	Indiana	31	1	0	2	34	10	9	2	10	31	41	10	2	12	65	13
14	Iowa	68	5	0	5	78	36	14	4	17	71	104	19	4	22	149	14
15	Kansas	25	4	0	3	32	28	13	6	10	57	53	17	6	13	89	15
16	Kentucky	22	6	1	2	31	18	5	3	11	37	40	11	4	13	68	16
17	Louisiana	67	9	1	3	80	14	0	0	4	18	81	9	1	7	98	17
18	Maine	37	1	0	5	43	2	0	0	6	8	39	1	0	11	51	18
19	Maryland	137	7	0	1	145	17	4	4	9	34	154	11	4	10	179	19
20	Massachusetts	243	14	19	29	305	0	0	0	0	0	243	14	19	29	305	20
21	Michigan	46	4	0	2	52	76	15	0	39	130	122	19	0	41	182	21
22	Minnesota	94	1	0	3	98	46	15	1	19	81	140	16	1	22	179	22
23	Mississippi	17	1	0	0	18	15	5	1	7	28	32	6	1	7	46	23
24	Missouri	106	8	6	16	136	53	17	5	21	96	159	25	11	37	232	24
25	Montana	15	5	1	5	26	0	0	0	0	0	15	5	1	5	26	25
26	Nebraska	94	4	3	1	102	25	18	4	18	65	119	22	7	19	167	26
27	Nevada	3	2	4	4	13	4	0	1	5	10	7	2	5	9	23	27
28	New Hampshire	4	0	1	0	5	10	0	0	3	13	14	0	1	3	18	28
29	New Jersey	57	2	0	2	61	130	20	0	52	202	187	22	0	54	263	29
30	New Mexico	0	2	0	0	2	17	9	1	21	48	17	11	1	21	50	30
31	New York	558	61	2	6	627	42	5	1	36	84	600	66	3	42	711	31
32	North Carolina	57	2	0	0	59	10	3	1	9	23	67	5	1	9	82	32
33	North Dakota	4	2	0	0	6	7	2	0	3	12	11	4	0	3	18	33
34	Ohio	111	39	0	6	156	83	12	1	32	128	194	51	1	38	284	34
35	Oklahoma	11	19	1	3	34	17	26	4	35	82	28	45	5	38	116	35
36	Oregon	27	0	2	10	39	0	0	0	0	0	27	0	2	10	39	36
37	Pennsylvania	187	18	0	8	213	52	0	1	3	56	239	18	1	11	269	37
38	Rhode Island	14	2	1	3	20	0	0	0	0	0	14	2	1	3	20	38
39	South Carolina	42	3	0	0	45	0	0	0	0	0	42	3	0	0	45	39
40	South Dakota	8	2	1	9	20	0	0	0	0	0	8	2	1	9	20	40
41	Tennessee	51	22	23	0	96	18	3	0	6	27	69	25	23	6	123	41
42	Texas	84	3	1[4]	1	89	72	35	15	64	186	156	38	16[4]	65	275	42
43	Utah	27	2	0	0	29	8	4	3	10	25	35	6	3	10	54	43
44	Vermont	20	2	0	0	22	0	0	0	2	2	20	2	0	2	24	44
45	Virginia	57	5	0	3	65	45	3	0	14	62	102	8	0	17	127	45
46	Washington	28	6	8	21	63	21	7	1	13	42	49	13	9	34	105	46
47	West Virginia	23	10	0	2	35	24	5	1	11	41	47	15	1	13	76	47
48	Wisconsin	32	1	0	1	34	65	20	2	11	98	97	21	2	12	132	48
49	Wyoming	3	8	4	4	19	9	3	1	3	16	12	11	5	7	35	49
50	U. S. Territories and Possessions	16	6	0	5	27	0	0	0	0	0	16	6	0	5	27	50
	Totals	3,102	499	192	267	4,060	1,266	373	86	799	2,524	4,368	872	278	1,066	6,584	

1. Of the 130 physicians licensed in Arkansas, the Regular Board licensed by examination 12 Class A, 12 Class B and 10 miscellaneous graduates and by reciprocity 19 Class A, 21 Class B and 20 miscellaneous graduates, a total of 94. The Eclectic Board licensed by examination all of the 33 Class C graduates and 2 of the miscellaneous graduates. The Homeopathic Board reported no candidates licensed either by examination or by reciprocity.

2. Of the 30 graduates of Class C colleges licensed in California, 13 were graduates of osteopathic colleges which are not generally recognized as medical colleges by state licensing boards. Altogether 28 osteopaths were admitted to the examination for licensure as physicians and 13 were licensed.

3. Of the 23 graduates of Class C colleges licensed in Colorado, 14 were graduates of osteopathic colleges, institutions inferior in most respects to Class C medical schools which are reported as not recognized in Colorado.

4. Texas licensed 1 Class C graduate by examination (although Class C colleges are reported as not recognized) and 15 Class C graduates (excluding 36 osteopaths) were licensed by reciprocity, a total of 16.

This table shows the classification of the colleges from which most of the physicians graduated who were licensed in 1919. Graduates of colleges which became extinct prior to 1907 who were examined, and all reciprocity licentiates who graduated prior to 1907, are unclassified and included under "miscellaneous" since it was in 1907 that the Council on Medical Education completed its first classification of all medical colleges.

It will be seen that sixteen states accepted altogether 46 Class C graduates through reciprocity where they did not license any by examination. On the whole, however, 192 were licensed by examination where only 86 were registered through reciprocity.

By both examination and reciprocity, the largest numbers of Class C graduates were licensed in Illinois, 38; Arkansas, 33; California, 30; Colorado and Tennessee, each 23; Massachusetts, 19 and Texas, 16; The Texas figures would be increased by 36 if the osteopaths registered by reciprocity were granted licenses as physicians. The largest numbers of Class B graduates were licensed in Illinois, 129; California, 69; New York, 66; Ohio, 51; Oklahoma, 45; Texas, 38 and Arkansas, 34.

Of all physicians licensed, 4,368, or 66.4 per cent., were graduates of Class A medical schools; 872, or 13.2 per cent., from Class B schools; 278, or 4.2 per cent., from Class C schools, and 1,066, or 16.2 per cent., from foreign and miscellaneous colleges.

TABLE J.—PHYSICIANS REGISTERED THROUGH RECIPROCITY BY STATE EXAMINING BOARDS DURING 1919

STATE BOARDS OF	Total Reg. by Recip.	Reg. by Ex. State	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Govt.*	Nat. Bd. Med. Ex.	U. S. Territories	Foreign
Alabama	32	..	..	..	..	..	..	..	..	..	..	4	..	1	..	..	..	..	1	4	..	1	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	10	..	..	..	..	..	..	..	6	..	..	..
Arkansas	60	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	2	4	..	..	1	..	8	7	..	..	..	..	..	..	..	..	..	..	4	..	1	..	..	..	..	20	9	..	1	..	..	..	..	..	..	..
California	336	1	3	4	..	10	1	1	4	2	2	3	50	13	20	13	4	1	1	4	8	17	10	..	11	6	11	5	1	1	1	29	..	3	15	2	12	14	1	..	1	9	3	6	1	..	17	..	6	..	7	..	2	..
Colorado	84	..	1	1	1	..	..	..	1	..	1	1	13	..	6	5	..	3	..	1	2	2	..	..	11	..	4	..	..	..	1	3	1	..	4	4	..	..	..	..	1	2	4	..	..	1	3	2	1	1	2	..	..	1
Connecticut	11	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	4	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Delaware	9	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	..	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Dist. of Col.	15	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	2	..	..	..	..	1	..	2	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	5	..	1	..	..	..	..	..	..	..
Georgia	51	6	..	1	..	..	..	..	..	..	..	..	..	2	..	1	4	4	..	10	..	1	1	1	..	2	..	..	..	2	..	..	..	1	..	..	1	..	3	..	..	..	7	1	2	..	..	..	..	..	..	1	..
Idaho	18	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	6	4	..	..	..	..	2	..	..	..	..
Illinois	98	..	..	1	..	..	..	1	..	..	..	..	..	..	6	5	..	8	1	..	6	1	5	3	..	28	..	5	..	..	..	3	..	1	3	..	..	2	..	..	..	..	..	1	2	..	1	9	..	1	..	..	..
Indiana	31	..	..	..	..	..	..	..	..	..	1	..	..	12	..	..	1	4	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	3	1	..	1	..	..	..	..	2	1	..	..	1	..	1	..	..	..	..
Iowa	71	1	..	..	..	..	..	..	..	..	..	..	..	25	..	..	4	..	..	4	..	..	3	1	..	8	..	17	..	1	..	..	..	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..
Kansas	57	..	..	..	..	..	..	..	1	..	..	..	..	13	1	1	..	3	2	1	..	..	..	15	..	..	..	1	..	..	..	1	..	..	8	..	..	1	..	..	..	4	2	1	..	..	..	1	1	..	..	..	..
Kentucky	36	..	..	3	..	..	..	..	1	..	2	..	..	5	..	..	..	..	..	..	2	..	2	..	..	1	..	..	..	..	..	..	..	..	5	..	..	1	..	..	..	6	..	..	..	1	..	4	..	..	2	1	..	..
Louisiana	18	2	..	2	..	1	..	..	..	..	1	..	..	1	..	1	1	1	..	..	..	..	..	3	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Maine	8	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maryland	33	1	..	..	..	..	..	..	5	..	1	..	..	3	..	..	..	..	1	2	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	4	..	..	1	..	..	..	..	..	3	..	10	..	..	..	..
Michigan	130	..	..	..	1	3	1	..	1	..	..	..	..	39	4	4	1	1	1	1	2	3	..	..	1	8	1	4	..	1	..	6	1	3	15	1	..	6	..	..	..	8	..	..	1	..	1	..	1	9	1	..	..
Minnesota	81	..	..	..	1	..	..	..	..	..	..	..	..	30	1	7	..	1	1	..	4	..	4	..	..	2	..	1	..	..	..	..	..	..	4	3	..	..	3	..	..	1	..	..	..	1	..	1	14	..	..	1	..
Mississippi	28	2	..	4	..	..	..	..	..	..	2	..	..	..	..	..	..	3	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	7	2	..	..	1	..	..	..	..	..	..	..
Missouri	96	..	..	6	1	2	..	..	..	..	..	..	..	15	3	4	25	3	1	1	4	..	4	..	2	..	..	..	2	..	..	1	..	..	..	..	1	2	5	..	..	..	7	1	..	1	1	1	..	..	..	..	..
Nebraska	65	1	1	..	2	1	..	..	..	..	..	..	..	21	..	3	3	1	..	..	1	2	..	1	..	7	..	..	..	1	..	..	..	4	..	..	3	1	..	..	..	..	2	2	..	..	2	..	..	..	5	1	..
Nevada	10	..	..	1	2	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..
New Hamp.	13	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	3	..	..	..	..	..	..	..	..
New Jersey	202	1	1	..	..	..	7	1	4	..	1	..	..	5	..	..	..	5	..	3	3	2	..	..	..	..	..	..	..	..	3	..	112	1	1	1	..	1	33	1	..	..	3	1	..	6	1	..	2	..	..	..	..
New Mexico	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New York	69	1	..	..	..	..	2	2	2	..	..	..	..	..	3	1	..	2	1	..	..	1	2	1	..	1	..	..	..	..	10	18	..	..	..	..	1	..	1	..	..	..	..	..	..	3	12	..	..	3	..	..	..	1	1
No. Carolina	23	..	..	..	..	..	1	..	..	..	..	..	..	2	1	1	..	..	..	1	..	1	3	1	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	1	..	4	..	..	3	..	1	..	..	..	..
No. Dakota	11	..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	1	..	..	..	..	..	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Ohio	128	3	..	..	..	..	..	..	1	3	..	..	..	17	7	2	..	11	1	2	9	..	10	..	..	10	..	1	..	..	..	..	..	15	..	..	..	1	..	19	..	..	..	..	..	1	6	..	7	2	..	..	..
Oklahoma	82	..	..	12	..	..	..	..	..	..	3	..	..	4	6	3	5	4	..	..	..	..	2	..	1	17	..	1	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	6	10	..	1	2	..	1	..	..	..
Penns'vania	56	..	..	..	..	..	2	..	..	..	1	..	..	..	4	1	..	..	..	..	..	3	2	..	..	..	..	..	..	..	3	..	6	..	3	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	19	11	..	..
Tennessee	27	4	..	6	..	..	..	..	1	..	3	..	..	..	..	..	..	..	..	..	1	..	..	5	2	..	..	..	..	2	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Texas	186	2	..	26	2	2	..	..	1	..	7	..	..	22	2	4	10	7	3	2	2	4	4	..	6	17	..	4	1	1	1	2	..	..	1	..	20	..	1	..	..	..	24	..	1	1	1	..	3	1	..	..	1	..	..
Utah	25	1	..	..	2	1	..	..	..	..	..	2	5	1	2	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	3	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..
Vermont	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Virginia	62	1	..	1	..	..	..	..	2	..	4	..	..	..	..	..	..	..	2	..	4	2	..	2	..	..	..	..	..	..	2	..	8	11	..	3	..	..	2	..	..	..	1	1	..	..	..	5	..	11	..	..	..
Washington	42	..	..	..	..	..	..	..	..	..	..	1	16	3	3	1	..	..	..	..	..	..	4	3	..	2	..	2	2	..	..	..	..	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
West Va.	41	..	..	..	..	1	..	..	2	..	2	..	2	..	1	..	5	..	..	..	1	..	1	1	..	2	..	1	..	..	..	..	..	1	5	..	..	..	2	..	..	..	..	..	1	13	..	..	..	..	..	..	..
Wisconsin	98	..	..	1	..	..	..	..	..	..	..	..	11	..	..	2	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	76	..	..	..
Wyoming	16	..	..	..	1	..	..	..	..	..	..	..	5	..	..	1	..	..	..	..	..	..	2	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..
Totals	2459	27	7	72	14	22	12	8	30	2	38	7	325	57	71	75	71	36	18	61	36	68	7	48	144	8	60	8	24	30	9	197	24	17	73	53	15	113	4	5	3	124	38	17	25	61	21	41	51	6	130	19	4	2
Number	....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53

* U. S. Army, Navy and Public Health Service.

This table shows the number of physicians registered by each state through reciprocity during 1919. Read from left to right, it shows the total number of physicians registered through reciprocity in the state named and the number of such candidates coming from each of the states named at the top of the various columns. Read from above downward, the figures show the number of physicians who left the state named at the head of the column and went to each of the states named in the corresponding lines, and at the bottom the total number of candidates leaving the state to go elsewhere. For example, read from left to right the table shows that Delaware registered nine candidates through reciprocity in 1919 and that, of these candidates one each came from the District of Columbia, New Jersey and Vermont and three each from New York and Pennsylvania. Read from above downward the table shows that from Delaware one candidate each went to California, Illinois, New Jersey and Ohio, and two each went to New York and Pennsylvania, the total leaving the state to go elsewhere being eight. The line at the bottom shows in what states physicians who registered through reciprocity obtained their original licenses. From Illinois 325 candidates, the largest number, obtained their original licenses. New York follows with 197, Missouri with 144, Tennessee with 124 and Pennsylvania with 113. The total number licensed by indorsement of licenses or certificates obtained in other states was 2,459. This total does not include 36 osteopaths who evidently were granted licenses as physicians and surgeons in Texas through reciprocity with osteopathic boards of other states.

TABLE K.—RECIPROCAL REGISTRATION IN FIVE YEARS (SHOWING WHAT STATES ISSUED ORIGINAL LICENSES)

STATE	Physicians Going from States Named During					Totals
	1915	1916	1917	1918	1919	
Alabama	1	4	8	12	27	52
Arizona	6	5	6	4	7	28
Arkansas	37	56	41	24	72	230
California	3	2	2	5	14	26
Colorado	15	8	14	10	32	69
Connecticut	3	1	0	2	12	18
Delaware	6	8	4	11	8	37
District of Columbia	18	20	16	14	30	98
Florida	4	2	1	2	2	11
Georgia	22	30	28	10	38	128
Idaho	1	5	4	0	7	17
Illinois	198	178	176	125	325	1002
Indiana	43	27	22	30	57	179
Iowa	46	32	44	40	71	233
Kansas	39	33	32	28	75	207
Kentucky	48	40	44	31	71	234
Louisiana	16	16	13	5	36	86
Maine	12	13	8	8	18	59
Maryland	38	45	34	25	61	203
Massachusetts	19	22	20	10	36	107
Michigan	42	34	42	24	69	211
Minnesota	34	19	28	20	27	128
Mississippi	10	18	50	11	48	146
Missouri	104	93	84	65	144	490
Montana	1	1	1	1	8	12
Nebraska	50	28	49	36	60	223
Nevada	9	7	5	7	8	36
New Hampshire	4	11	7	4	24	50
New Jersey	22	17	16	15	30	100
New Mexico	5	2	2	6	9	24
New York	73	84	83	74	197	511
North Carolina	13	17	9	16	24	79
North Dakota	6	4	13	4	17	44
Ohio	47	51	43	27	73	241
Oklahoma	28	26	17	28	53	152
Oregon	2	2	3	7	15	29
Pennsylvania	79	74	62	57	113	385
Rhode Island	2	1	3	1	4	11
South Carolina	12	7	7	4	5	35
South Dakota	7	3	3	6	3	22
Tennessee	34	65	67	34	124	324
Texas	12	15	20	23	38	108
Utah	6	16	13	6	17	58
Vermont	25	15	13	7	25	85
Virginia	30	36	42	36	61	205
Washington	10	12	10	12	21	65
West Virginia	36	25	24	16	41	142
Wisconsin	29	32	28	13	51	153
Wyoming	5	1	4	4	6	20
U. S. Territories and Possessions	....	1	1	1	4	7
Army, Navy, P. H. Service	1	1	1	10	130	143
Natl. Bd. of Med. Exam.	....	....	2	1	19	22
Foreign and Misc.	1	6	1	....	2	10
Totals	1314	1271	1279	972	2459	7295

This table shows that 7,295 candidates were registered through reciprocity during the last five years. Registration by reciprocity gradually increased from 1905 to 1914, since which time there has been a gradual decrease as the total of physicians licensed by other methods has decreased. In 1918 there was a marked decrease in the total registered due largely to the war. This year there was an increase of 1,487 due to a large migration following the return from military service. It will be noted that 130 were registered in 1919 on this basis. A study of the totals for the different states shows that of the 7,295 registered during the five years 1,002, or 13.7 per cent., obtained their original licenses in Illinois. New York could easily lead Illinois but reciprocal relations have been established with only six other states.

cent., came from medical colleges which have ceased to exist and from foreign medical colleges. By comparing these figures with the results for 1917 and 1918 as shown in Table 3, it is noteworthy that the percentages from Class B and Class C colleges are steadily decreasing in spite of the fact that, in a few states, osteopaths are being licensed as physicians and surgeons.

TABLE 3.—SOURCE OF PHYSICIANS LICENSED IN THREE YEARS

Year	Medical Colleges in						Miscellaneous and Foreign Colleges		Total
	Class A		Class B		Class C				
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	
1917	3,369	62.1	988	18.2	297	5.3	769	14.4	5,423
1918	2,456	58.7	682	16.3	342	8.2	705	16.8	4,185
1919	4,368	66.4	872	13.2	278	4.2	1,066	16.2	6,584
Totals	10,193	63.0	2,542	15.7	917	5.6	2,540	15.7	16,192

TABLE L.—STATE REQUIREMENTS OF PRELIMINARY EDUCATION

There are now forty states which have adopted requirements of preliminary education in addition to a standard four-year high school education. Of this number 32 now require the two year standard. These states, the number of college years required and the time the higher requirements became or become effective are as follows:

State Examining Board of	One Year of College Work		Two Years of College Work	
	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Graduates
Alabama	.....	....	1915-16	1919
Alaska	1914-15	1918	1918-19	1922
Arizona	1914-15	1918	1918-19	1922
Arkansas[1]	1915-16	1919	1918-19	1922
California	1915-16	1919	.....	....
Colorado	1908-09	1912	1910-11	1914
Connecticut	1911-12	1915	.....	....
Delaware*	.....	....	.....	....
District of Columbia†	.....	....	.....	....
Florida[1]	1914-15	1918	1918-19	1922
Georgia*	.....	....	1918-19	1922
Idaho*	.....	....	.....	....
Illinois	1915-16	1919	1918-19	1922
Indiana	1910-11	1914	1911-12	1915
Iowa	.....	....	1911-12	1915
Kansas	1910-11	1914	1918-19	1922
Kentucky	1914-15	1918	.....	....
Louisiana	1915-16	1919	1918-19	1922
Maine	1915-16	1919	.....	....
Maryland	1914-15	1918	1918-19	1922
Massachusetts†	.....	....	.....	....
Michigan	1914-15	1918	1918-19	1922
Minnesota	.....	....	1908-09	1912
Mississippi	1915-16	1919	1919-20	1923
Missouri*	.....	....	.....	....
Montana	1914-15	1918	1918-19	1922
Nebraska*	.....	....	.....	....
Nevada*	.....	....	.....	....
New Hampshire	1914-15	1918	1915-16	1919
New Jersey	1915-16	1919	1917-18	1921
New Mexico	1914-15	1918	1918-19	1922
New York	1917-18	1921	1918-19	1922
North Carolina	1914-15	1918	1918-19	1922
North Dakota	.....	....	1908-09	1912
Ohio*	.....	....	.....	....
Oklahoma	1914-15	1918	1917-18	1921
Oregon†	.....	....	.....	....
Pennsylvania	1914-15	1918	.....	....
Rhode Island	1914-15	1918	1918-19	1922
South Carolina	.....	....	1918-19	1922
South Dakota	1908-09	1912	1911-12	1915
Tennessee	1916-17	1920	1918-19	1922
Texas	1914-15	1918	.....	....
Utah	1913-14	1917	.....	....
Vermont	1913-14	1917	1918-19	1922
Virginia	1014-15	1918	1917-18	1921
Washington	1914-15	1918	1918-19	1922
West Virginia	1917-18	1921	.....	....
Wisconsin	.....	....	1915-16	1919
Wyoming†	.....	....	.....	....

* Require a four-year high school education or its equivalent.
† No fixed standard.
1. The higher standards in Arkansas and Florida are evidently not enforced by the sectarian licensing boards of those states.

Registration by Reciprocity

Table J gives those registered without examination on presentation of satisfactory credentials, which included a license issued by some other state. This is commonly referred to as "reciprocity," which conveys the idea that the state which accepts a license of another must be granted the same courtesy by the state issuing the original license. The term does not always apply, however, since some state boards—Arizona, California, Colorado, Delaware, Maryland, New Hampshire, New Jersey and North Carolina, as examples—accept the physician's credentials, if satisfactory, whether or not the state board issuing the original license returns the favor. Had not reciprocal relations been established by the forty states shown in Table J, 2,458 physicians —many of whom had been in practice for ten or more years —would have been compelled to undergo the ordeal of a second trying examination. This year 130 physicians were registered without examination, largely in Minnesota and Wisconsin, on the basis of their having been commissioned in the government medical services.

Table K shows in what states were granted the original licenses of those who were registered elsewhere under the reciprocity provision during the last five years. Of the 7,294 physicians licensed through reciprocity during the last five years, the largest number coming from any one state was 1,002, who obtained their original licenses in Illinois. Although New York has a larger number of medical college graduates each year than Illinois,[2] only 511 physicians obtained original licenses in New York and registered elsewhere through reciprocity in the last five years. This is accounted for by the fact that Illinois has reciprocal relations with twenty-five other states, while New York has established such relations with only six.

TABLE M.—ADVANCES IN STATE LICENSE REQUIREMENTS IN SIXTEEN YEARS

Requirement or Provision	States Having Provision for			States Still Having No Provision for
	1904	1920	Increase	
Preliminary Education—				
Any requirement	20	47	27	3[1]
A standard four-year high school education or higher	10	45	35	5[2]
One year or more of college work	0	40[3]	40	10[3]
Two years of college work as a minimum	0	32[4]	32	18[3]
That all applicants be graduates of a medical college	36	49	13	1[4]
That all applicants undergo an examination for license	45	49	4	1[5]
Requirement of practical tests in the license examinations	1	16	15	34
Hospital intern year required	0	10[6]	10	39
Full authority by board to refuse recognition to low-grade colleges	14	45	31	5[7]
Boards refusing to recognize low-grade colleges[8]	5	42	37	8[9]
Reciprocal relations with other states	27	44	17	6[10]
Single boards of medical examiners	36	44	8	6[11]

1. District of Columbia, Massachusetts and Wyoming.
2. Idaho, Oregon and the states named in Footnote 1.
3. See Table L.
4. Colorado.
5. New Mexico.
6. Pennsylvania, 1914; New Jersey, 1916; Alaska, 1917; Rhode Island, 1917; North Dakota, 1918; Washington, 1919; Illinois and Michigan, 1922; Iowa, 1923, and Texas, 1924.
7. District of Columbia, Massachusetts, Utah, Washington and Wyoming.
8. In three states, Arkansas, Connecticut and Florida, each of which has three separate boards, only the regular (nonsectarian) boards have refused recognition to low standard medical colleges and have enforced higher standards of preliminary education.
9. Alaska, Arizona, Nebraska, Nevada and the states named in Footnote 7.
10. Alaska, Arizona, Connecticut, Florida, Massachusetts, Rhode Island. To this list should be added the outlying territories of Canal Zone, Philippine Islands and Porto Rico, which have no provision for reciprocity.
11. Multiple boards still remain in Arkansas, Connecticut, District of Columbia, Florida, Louisiana and Maryland.

Improved Standards of Licensure

Table L shows the states which have adopted one or two years of college work as a minimum standard of preliminary education for those who seek the license to practice medicine in those states. The first and third columns show, respectively, when the one year and the two years of premedical

2. The Journal, Aug. 16, 1919, p. 513, Table 12.

college work affects students matriculating in medical colleges, and the second and fourth columns give the years in and after which all applicants for licenses in the various states are affected by the increased requirements. This table shows the rapidity with which state board requirements of preliminary education have been advanced since 1908, prior to which no state was requiring more than a four-year high school education. As will be noted, there are now forty states which have adopted the higher standard, and thirty-two of these require as a minimum *two years* of premedical college work. It is understood that in every instance the one or two years of collegiate work must have included courses in physics, chemistry and biology.

In Table M the advance in standards of licensure is shown for all states since 1904. The most marked increase is in regard to the requirement of collegiate work in forty states as referred to in Table L. The next greatest increase (thirty-seven) is in the number of states—now forty-two—which are refusing to recognize low-grade medical colleges. Although, as shown in the third column, marked improvements have been made in state requirements for licensure, nevertheless, as indicated by the last column, there is still room for further improvement. The greatest needs are for a wider adoption of the requirement of the hospital intern year, the standard of two years of premedical college work, and—a matter of more vital importance—a more general and larger use of practical tests in the examinations. The states in which the boards are making really effective use of such examinations are Illinois, Massachusetts, Minnesota, North Dakota, Ohio and South Dakota. They are being followed to a greater or less extent in a few other states.

Hospital Intern Year

The hospital intern year has been adopted as an essential qualification for the license to practice in ten states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1917
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1917-18	1922
Michigan	1917-18	1922
Iowa	1918-19	1923
Texas	1919-20	1924

Recognition of Government Examination

The examination given under federal authority, which should be generally recognized by all state licensing boards as a qualification for license to practice medicine, is that given to medical officers of the United States Army, Navy, and Public Health Service. In fact, retired officers from the services mentioned are now eligible to receive licenses without further examination in

Alabama	Illinois	Virginia
California	North Dakota	Wisconsin
Colorado	Porto Rico	

This has been interpreted in most of the above states to apply only to those who were admitted to the government services under the strict examination which prevailed prior to the entrance of the United States in the World War and not to those who were commissioned after the admission requirements were relaxed. In Wisconsin, however, 76 physicians were licensed following their discharge from the government services. In Minnesota in April, 1919, a special law was enacted empowering the licensing board to register without examination physicians who had been in the government medical service overseas. Pennsylvania and Virginia licensed, respectively, 19 and 11 government medical officers following their discharge.

National Board of Medical Examiners

The National Board of Medical Examiners, which was organized in 1915, consists of fifteen members, including the Surgeon-Generals of the Army, Navy and Public Health Service, and one other representative of each of those services, three representatives of the state medical licensing boards and six members appointed at large. Up to Dec. 31, 1919, seven examinations had been held as shown in the following tabulation:

Date of Examination	Where Held	Total Examined	Passed	Failed	Percentage Failed
Oct., 1916	Washington	10	5	5	50.0
June, 1917	Washington	12	9	3	33.3
Oct., 1917	Chicago	28	22	6	21.5
Jan., 1918	New York	20	18	2	10.0
Apr.,, 1918	Ft. Riley, Ft. Oglethorpe	23	18	5	26.1
Dec., 1918	Chicago, New York	16	15	1	6.3
June, 1919	Philadelphia	52	51	1	1.9
Totals		161	138	23	14.3

Thirty medical schools were represented and the results were as follows:

College	Total Examined	Passed	Failed	Percentage Failed
Boston University S. of M.	1	1	0	0.0
Columbia Univ. Coll. of P. & S.	11	11	0	0.0
Cornell Univ. Med. College	4	4	0	0.0
Emory University School of Med.	1	1	0	0.0
Georgetown University	1	1	0	0.0
Harvard University M. S.	9	9	0	0.0
Howard Univ. School of Med.	1	0	1	100.0
Indiana Univ. School of Med.	2	1	1	50.0
Jefferson Medical College	3	1	2	66.7
Johns Hopkins University M. D.	14	12	2	14.3
McGill University Faculty of M.	1	0	1	100.0
Northwestern Univ. Med. School.	17	13	4	23.5
Rush Medical College	34	28	6	23.5
State Univ. of Iowa C. of M.	3	2	1	33.3
Univ. and Bellevue Hosp. M. C.	1	0	1	100.0
University of Buffalo M. D.	1	1	0	0.0
University of California M. S.	1	1	0	0.0
University of Colorado S of M.	1	1	0	0.0
University of Maryland S. of M.	1	1	0	0.0
University of Michigan M. S.	3	1	2	66.7
University of Minnesota M. S.	2	1	1	50.0
University of Nebraska C. of M.	1	1	0	0.0
University of Penna. S. of M.	39	38	1	2.6
University of Pittsburgh S. of M.	1	1	0	0.0
University of Texas Dept. of M.	3	3	0	0.0
University of Utrecht	1	1	0	0.0
University of Va. Dept. of M.	1	1	0	0.0
Western Reserve Univ. S. of M.	1	1	0	0.0
Woman's Medical College	1	1	0	0.0
Yale University School of Med.	1	1	0	0.0
Totals	161	138	23	14.3

Holders of certificates from the National Board of Medical Examiners will be registered without further examination in the following twenty states:

Alabama	Kentucky	North Dakota
Colorado	Maryland	Pennsylvania
Delaware	Minnesota	Rhode Island
Florida	Nebraska	South Carolina
Georgia	New Hampshire	Vermont
Idaho	New Jersey	Virginia
Iowa	North Carolina	

When the permanence of the National Board of Medical Examiners is established and the high character of its examinations is more generally recognized, it is quite probable that its certificate will be recognized by the licensing boards of a larger number, if not of all states.

In Conclusion

In the gathering and publication of these statistics, the endeavor has been to give a fair presentation of facts, a knowledge of which is always beneficial. This annual presentation of the results of state license examinations has had a powerful influence on medical education and medical licensure in this country. We reiterate our acknowledgments to the state licensing boards for their ready cooperation and the complete reports which have been furnished. For the verification of all figures, the reports and data furnished by medical colleges have been of much value. We have no doubt that the information here published will be of service not only to the medical colleges and to the state boards, but also to the public, since the end-result is better qualified physicians.

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SATURDAY, APRIL 17, 1920

STATISTICS OF THE STATE BOARD EXAMINATIONS

We publish this week, for the seventeenth consecutive year, statistics based on official reports of examinations conducted by state medical boards, and of registrations by reciprocity and other methods. During these seventeen years the work has had the hearty support and cooperation of the executive officers of the various state licensing boards, who have furnished reports of their examinations. Every report has been carefully checked with alumni lists furnished by the deans of the medical colleges, and by this cross-checking, errors have been corrected and the state boards concerned have been notified. Thus, not only have these statistics been made accurate and reliable, but also state board records have been corrected. We express our acknowledgments for the splendid cooperation of the officers of both the state licensing boards and the medical colleges by which the publication of these statistics has been made possible.

NO PROTECTION AGAINST INCOMPETENTS IN ARKANSAS

These statistics are of great importance as they relate to medical education and to medical licensure. For each state they show the number and character of physicians admitted to examinations; the character of the colleges from which they graduated; the numbers registered or rejected, and the proportion rejected. The material is so arranged that the facts regarding any one college or any one state can be compared with those, respectively, of all other colleges and states. Figures show that in some states people are well protected against illiterate and incompetent physicians, while in others, in varying degrees, the opposite situation prevails. A glaring instance relates to Arkansas, where, in spite of what the regular board of medical examiners is doing to enforce reasonably high educational standards and methods of licensure, thirty-six physicians were licensed who could not meet its requirements. This was because of the existence of a separate board of eclectic examiners. Among other applicants, this board examined thirty-three graduates of a nominally eclectic medical school, the Kansas City College of Medicine and Surgery, and licensed all but one of them, even though it was well known that this college is not recognized by the licensing board of Missouri—its home state—and by the boards of thirty-six other states. And this has been going on for several years. Indeed, the reports seem to indicate that neither the Arkansas Board of Eclectic Examiners nor the Kansas City College of Medicine and Surgery could exist without the other. Arkansas, Florida and Connecticut, meanwhile, are three states which still have separate sectarian boards.

LICENSING OSTEOPATHS

During the last three years a few boards have examined osteopaths and licensed them as physicians. The objection to this is not that these candidates were osteopaths, but that their educational qualifications were seriously inferior to those which physicians are required to possess. Osteopathic colleges have been repeatedly inspected and, when measured by the same standards as are applied in the grading of medical schools, no one of them could rank higher than the lowest Class C medical college. Nevertheless, fourteen osteopaths were licensed as physicians in Colorado by examination, thirteen in California, two in Washington, and one each in New Hampshire and Texas.

THE STATISTICS

Special attention is called to Table I (page 1097), which shows the states—Illinois leading—which are registering the largest numbers of graduates of Class C and Class B colleges. Other states in this group are Arkansas, California, Colorado, Tennessee, Nebraska and Texas. The figures in Table H (page 1096) indicate that applicants are flocking to states—Massachusetts, for example—in which adequate educational safeguards have not been provided.

The effect of these statistics on both medical education and medical licensure has been profound. The first step toward the securing of improvements in any reform is to find out where improvements are needed. That has been the function of these statistics in medical education and licensure.

When the collection of data from the various boards was begun by THE JOURNAL in 1903, reports from many states could not be obtained for the very reason that records were not complete or were too imperfect to enable the boards to supply the information needed. That this condition has been corrected is evidenced by the fact that for the last several years full and complete reports have been received from all state boards.

Since 1905, the collection of these statistics has been an important part of the work of the Council on Medical Education in its campaign for the improvement of medical education and licensure. The effectiveness of publicity in medical licensure may be noted in Table M, on page 1099. Higher standards of preliminary education have been adopted; all states now require

that applicants must have graduated from a medical school; all but one state, New Mexico, now require an examination of all applicants; a larger number of states have improved their examination by the use of practical laboratory and clinical tests; a larger number of states have obtained authority to refuse recognition to low-grade medical colleges and are making use of that authority; reciprocal relations between states have been widely extended; ten states require a hospital internship as an essential for the license, and all but a few states now have single boards of medical examiners.

EFFECTS ON MEDICAL EDUCATION

On medical education the effect of these statistics has been even more pronounced. Publicity regarding the percentages of failures of graduates at state licensing examinations has led to the adoption of better methods of teaching. Publicity of the fact that in certain states diplomas granted by various colleges were not recognized as an acceptable qualification for the license induced a number of medical schools to make improvements in order to retain students. That such improvements have been made is shown by the increased number of colleges each year which are recognized in all states.

Briefly, these statistics show each medical school what improvements are essential if its graduates are to succeed in examinations of state boards; what state boards are requiring as a minimum of preliminary education, and in what states the boards are refusing to examine its graduates. To each state board these statistics show, by comparison with other states, the lines along which further improvements are needed in its educational standards and methods of examination. Constant publicity has led to a general improvement and a greater uniformity in the methods of examination by all state boards. The result has been a lessened confusion in the licensing of physicians throughout the country, and correspondingly better safeguards for the public against the licensing of incompetent practitioners.

ACCURACY OF THE WASSERMANN TEST

Under the auspices of the Medical Research Committee, established under the British National Health Insurance Act, numerous investigations have been made of scientific problems affecting the health and the life of the people. Already more than fifty special reports have been issued. The committee considered that the national and racial importance, no less than the scientific interest of the problems relating to syphilis, were a matter for early investigation, and several reports have been issued in this connection. In a previous report [1] of the Special Committee on Pathologic Methods, the diagnostic value of the Wassermann test was considered. The clinical opinion of a well-known syphilologist was compared in a given set of cases with the results obtained by the Wassermann reaction as performed by four expert serologists working independently. The results were found to be in the closest accordance with the clinical opinion.

In a recent report [2] the investigation has been carried further: the Wassermann test during life was correlated with the etiologic or anatomic diagnosis made during life and after death. The first part, by Dr. Hubert M. Turnbull of the Pathologic Institute of the London Hospital, concerns the accuracy of Wassermann tests applied before death as related to the findings on postmortem examinations. It is stated in the introduction that whereas this test has been applied in millions of instances, "it is difficult, if not impossible, to find in medical literature a large series of cases in which the etiologic and anatomic diagnosis has been registered in addition to the clinical diagnosis." Dr. Turnbull's report deals with 121 cases in which Wassermann tests had been performed during life by Drs. Fildes and McIntosh. Following the deaths of the patients, minute examination of necropsy material was made. In many instances such minute examination is not made, with the result that lesions are overlooked. It is possible, for instance, that a Wasserman reaction may be positive and no syphilitic lesion may be found postmortem. This is possible because the lesion may exist and not be found, or because a lesion which was present has disappeared under treatment. On the other hand, a Wassermann reaction may be negative, and yet lesions believed to be syphilitic may be demonstrable.

As a result of his investigations, which included the making of thousands of microscopic sections, with their examination, interpretation and classification, Dr. Turnbull concludes that the Wassermann test performed antemortem, as was done in the 121 cases which he examined, is a diagnostic measure of astonishing precision. No proof of inaccuracy of the Wassermann test was found in the whole 121 cases, provided that the test is expected only (1) to give a positive reaction when syphilitic infection is active, and (2) to give a positive reaction either in the serum or in the cerebrospinal fluid when active syphilitic infection is confined to the central nervous system. The report is detailed, extensive, and apparently minutely accurate. It constitutes, therefore, an important document in the study of syphilis.

In the references to literature cited by the author, there is no reference to other than British, German and French periodicals. It would interest him, therefore, to refer to a paper on the value of the Wassermann reaction as indicated by postmortem investiga-

1. The Diagnostic Value of the Wassermann Test, Reports of the Special Committee on Pathologic Methods, Special Report Series 21, Medical Research Committee, National Health Insurance, H. M. Stationery Office, London.

2. Turnbull, H. M.: The Accuracy of Wassermann Tests, Applied Before and After Death, Estimated by Necropsies, Special Report Series 47, Medical Research Committee, National Health Insurance, H. M. Stationery Office, London.

tion in 331 cases at Bellevue Hospital, as reported by Symmers and others in THE JOURNAL.[3] This paper, published in 1918, antedated even the beginning of Turnbull's work. Symmers, too, points out that certain anatomic changes in persons suspected of syphilis are sometimes exceedingly difficult to interpret, not only in the gross organs as they come under orderly examination at necropsy, but also in the subsequent microscopic investigation of individual tissues. He feels, however, that the errors in diagnosis for or against syphilis will balance. As a result of his investigation, he reports that the Wassermann reaction in the living patient gives a negative result in from 31 to 56 per cent. of cases in which the characteristic anatomic signs of syphilis are demonstrable at necropsy, and that it is positive in at least 30 per cent. of cases in which it is not possible to demonstrate at all the anatomic lesions of syphilis at necropsy.

Here, then, is a wide divergence of opinion, based in each instance on an apparently accurate scientific investigation. The subject obviously is susceptible to further study.

CALCIUM IN THE BODY

Calcium, which makes up about one fiftieth of the weight, constitutes a larger proportion of the body than is represented by any other of the inorganic elements. This fact is by itself sufficient to lend importance to all considerations of the supply of calcium to the body. It happens that this element is distributed with considerable irregularity among the staple articles of food, so that its intake depends in no small degree on the qualitative character of the diet. Among animal foods, milk stands almost alone in exhibiting a conspicuous content of calcium, while among plant products few show even moderate richness in this element. Such facts are probably responsible for the significant statement that "the ordinary mixed diet of Americans and Europeans, at least among dwellers in cities and towns, is probably more often deficient in calcium than in any other chemical element." [4]

In view of the widespread shortage of milk—"the calcium food"—in certain parts of the world, with a reduction in the use of milk following the higher price of this food in many places, the calcium problem in nutrition has become accentuated to an unusual degree. The practice of adding green vegetables, comparatively rich in calcium, to the dietary of infants has increased in recent years. Students of the subject have expressed the belief that the value of such feeding lies in the effect on the mineral metabolism of the organism.[5] They have reported that in children showing a delayed development, improvement has been brought about by such additions, and they conclude, on the basis of the mineral content of a number of vegetables, that spinach is the best one to provide a salt addition.

From experiments on animals, McClugage and Mendel [6] of Yale University gained the impression, through a study of carrots and spinach, respectively, as substitutes for milk in furnishing calcium in the dietary, that their use does not always yield a pronounced advantage to the calcium metabolism. Presumably, therefore, it would be an unsafe procedure to use vegetables extensively as a dietary substitute for milk in the nutrition of children. That broad generalizations applicable to all species and ages are not yet justified, however, is indicated by more recent observations in the Department of Nutrition at Teachers College, Columbia University. Rose [7] has ascertained the utilization of the calcium of carrots in the human body on persons for whom the calcium intake was in every case close to the estimated minimum for equilibrium. In almost every case there was a positive calcium balance on the carrot diet. When approximately 55 per cent. of the calcium was derived from carrots, one subject had practically the same retention as on a diet in which 70 per cent. of the calcium was derived from milk. Hence Rose properly argues that it seems possible to meet the requirement of the adult human organism for calcium largely, if not wholly, from carrots.

Another question, involving somewhat differently the content of calcium in the daily intake, relates to the possibility of increasing the content of this element in the blood by increasing the ingestion of calcium. This end is sought frequently in current therapeutic efforts, and calcium salts (chlorid, lactate, glycerophosphate) are often prescribed. The latest studies by Denis and Minot [8] at the Massachusetts General Hospital indicate that it is difficult, if not actually impossible, to enrich human blood in this way. Even 6 gm. (90 grains) of calcium lactate administered orally each day for five days failed to alter the plasma content appreciably. It is possible, judging by the outcome of a few animal tests, that when the initial concentration is very low the amount in the circulating fluid may be more decidedly increased. This needs eventually to be determined in suitable human cases.

3. Symmers, Douglas; Darlington, C. G., and Bittman, Helen: The Value of the Wassermann Reaction, J. A. M. A. **70**: 279 (Feb. 2) 1918.
4. Sherman H. C.: Chemistry of Food and Nutrition, New York, 1918, p. 262.
5. Courtney, A. M.; Fales, H. L., and Bartlett, F. H.: Some Analyses of Vegetables Showing the Effect of the Method of Cooking, Am. J. Dis. Child. **14**: 34 (July) 1917.
6. McClugage, H. B., and Mendel, L. B.: Experiments on the Utilization of Nitrogen, Calcium and Magnesium in Diets Containing Carrots and Spinach, J. Biol. Chem. **35**: 353 (Aug.) 1918.
7. Rose, Mary S.: Experiments on the Utilization of the Calcium of Carrots by Man, J. Biol. Chem. **41**: 349 (March) 1920.
8. Denis, W., and Minot, A. S.: Effects of Feeding with Calcium Salts on the Calcium Content of the Blood, J. Biol. Chem. **41**: 357 (March) 1920.

A Surgeon's Career.—There are three stages in the career of a surgeon: In the first he loses the fear of hemorrhage; in the second he ceases to multiply operations; in the third he acquires the moral courage to stop in the middle of an operation when he finds the condition inoperable. There is a final stage which he never attains with the present span of life—the ability to gage correctly the vital resistance of the patient; yet on this depends the success of every operation.—Sir D'Arcy Power, Surgical Aphorisms, *Clin. J.* **49**:28 (Feb.) 1920.

Current Comment

NATIONAL BOARD OF MEDICAL EXAMINERS

The National Board of Medical Examiners up to December, 1919, had been in existence for four years,[1] and in that time had held seven examinations and examined 161 candidates, of whom 138 passed and received the board's certificate. A sufficient number of examinations have been held, and the board has been in existence long enough to permit its policies and methods to become fairly well established. It is now generally well known that the board has held to reasonably high educational standards, and that its examinations have been comprehensive, practical and thorough. The examinations have been such as to bring out the character of the applicant's medical training and to test not only his ability to memorize, but also his power to observe and his ability in reaching accurate diagnoses to apply the knowledge he has obtained. That the methods and the character of the examinations of this board are being appreciated is evidenced by the fact that twenty state boards[2] are now recognizing its certificates. The expenses of the board have been approximately $15,000 each year, the funds having been provided by the Carnegie Foundation for the Advancement of Teaching. This is a large expense, in view of the small number of candidates examined. That the board has not made more rapid advancement and performed a larger function is due mainly to its failure to conduct its examinations in a larger number of cities. It would appear that arrangements could be made so that the written portion of the examination might be held simultaneously in all parts of the country, as is that of the College Entrance Examination Board. It might at least be held in the various cities where medical schools are located. The manner by which the applicants could be given their practical, laboratory and clinical tests could doubtless also be worked out. It would appear that the work and influence of this board could be many times greater than it is at present, and its service to humanity correspondingly increased. The possibilities of this board for good are tremendous; but it is not making the most of its opportunity.

MULTIPLE BOARDS AND CONFUSION IN LICENSURE

The chief difficulty in medical licensure at present is the confusion caused in several states by the multiplicity of the medical and sectarian boards which have to do with the licensing of those who are to treat the sick. This condition should be corrected. Whether or not the practitioner is to make use of medicinal substances, whether he is to apply massage, electricity, cold compresses or to perform a surgical operation is not so material. The matter of first importance is whether he who holds himself out to treat the sick has had training sufficient to familiarize himself not only with the normal conditions and functions of the human body, but also with the various forms of disease so that he may tell whether or not a patient is sick, and if so, what the trouble is. The practitioner should also be familiar with the many procedures and materials used in the treatment of human disorders so that he can select and apply the right treatment to each particular patient. These statements apply to all practitioners of the healing art regardless of the particular system or method of treatment they advocate. To claim that one form of treatment is applicable to all human disorders is as illogical as to state that the slide-trombone constitutes an entire orchestra. Before one specializes in the playing of any particular musical instrument in an orchestra he must first have secured a training in the fundamentals of music, so that he may know not only when to play but—fully as important—when he should not play. In fact, a note from an instrument in the wrong place may produce more disastrous results than if the player fails to respond at the time his part is indicated. So in the practice of the healing art. Every one who treats human disorders by any special method or system of treatment should first have a thorough training in the fundamental medical sciences, so that he will understand not only when his particular method should be used, but, even more important, when it should not be used. Here again, the use of the wrong method of treatment may produce results fully as disastrous, if not more so, than if such treatment is not used in cases in which it is indicated. In fairness to all who practice the healing art, therefore, there should be in every state: (*a*) one board of registration; (*b*) one standard of educational qualifications, and (*c*) one examination, including written, practical, laboratory and clinical tests. In other words, let all practitioners alike be required to possess reasonably high educational qualifications, and then let them practice as their educated common sense may dictate. Such a provision would not only end the confusion which exists in many states, but also insure better care for the public when sick or injured.

DOES PROHIBITION PAY FROM A HEALTH STANDPOINT?

With the beginning of prohibition, alarmists—there are always such—predicted dire calamities: increase in crime, resort to habit-forming drugs and other vicious practices. The time has been brief for the compilation of accurate statistics on the subject, but some actual evidence has accumulated: In New York City, the Board of Ambulance Service has reported a large decrease in cases of alcoholism and intoxication. In 1919, during January and February, there were 412 and 364 alcoholic calls, respectively. This year, during the same months, these calls numbered 307 and 133. Bellevue Hospital's figures show 228 calls for intoxication during the first two months of 1919 and thirty-one calls for January and February of 1920. As a result, it is estimated that there will be room for seven thousand new patients a year in Bellevue Hospital, owing to the reduction in the number of alcoholic patients. These figures are for New York. What of other cities?

1. See statistics on page 1100, this issue.
2. The list is given on page 1100, this issue.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. John C. Davis, Harrisburg, has been appointed health officer of Poinsett County succeeding Dr. Robert E. Yarbraugh, deceased.——Dr. Oliver H. Tatum has been appointed city health officer of Arkadelphia, succeeding Dr. William T. Rowland, resigned.

New Officers for State Board of Health.—At the annual meeting of the Arkansas State Board of Health, March 25, Dr. Cyrus F. Crosby, Heber Springs, was elected president, and Dr. Fergus O. Mahony, Eldorado, vice president, each for a term of one year, and Dr. Charles W. Garrison, Little Rock, was reelected secretary and state health officer for a term of four years.

New Society Organization.—At a meeting of the physicians of Little Rock, March 9, the North Little Rock Medical Society was organized. Dr. Shelby Atkinson, Argenta, was elected president; Dr. Martin J. Barlow, Argenta, secretary-treasurer, and a committee was appointed to confer with the finance committee of the city council on the erection of a hospital for North Little Rock.

Conference of Health Officers.—The seventh annual conference of health officers of Arkansas was held in Little Rock, March 25, under the chairmanship of Dr. Charles W. Garrison, Little Rock, secretary of the state board of health. The chief papers presented were by Dr. Charles W. Goodard, Austin, state health officer of Texas, on "The Way We Do Things in Texas"; by Miss Lillie Beauchamp, state supervisor of the American Red Cross, on "The Necessity of State Supervision of Public Health Nurses," and by Miss Earl Chambers, executive secretary of the Arkansas Public Health Association, on "How the Arkansas Public Health Association Can Assist Health Authorities."

DISTRICT OF COLUMBIA

Construction of Gallinger Municipal Hospital Postponed.—The committee on the District of Columbia of the House of Representatives recently recommended the appropriation of $1,500,000 for building the Gallinger Municipal Hospital in Washington. This appropriation was stricken from the District bill on the floor of the House following a debate showing that this appropriation was three times as large as that provided for exactly the same character of building in 1917. The District commissioners have been unable to negotiate a contract for the construction of the building since 1917 and members of Congress determined to postpone construction of this hospital indefinitely because of the excessive cost of construction at the present time.

GEORGIA

Personal.—A department of sanitary engineering has been established by the state board of health with Mr. H. C. Woodfall as state sanitary engineer. Mr. Woodfall was formerly assistant sanitary engineer with the U. S. Public Health Service, and will devote his time to problems of water supplies, sewage disposal and drainage for the state.——Dr. Frank W. McCorkle, former assistant health officer of Madison County, Ala., has been elected commissioner of health of Decatur County.

Venereal Disease Control.—The venereal disease control work has been keeping pace with its program in the state very well. The interest in the county unit plan has been intensified, and the representatives of the state board of health in their respective counties are doing good work. The department of venereal disease control has mailed to the physicians a supply of report blanks in the past few weeks. It is hoped that physicians will be prompt in making reports. The law is given on the cover of the book of forms, and it is believed that reports on venereal diseases will soon reach a satisfactory basis.

ILLINOIS

Physicians' Licenses Revoked.—At its meeting, April 1, 1920, the Illinois Department of Registration and Education revoked the licenses of Dr. George W. Alverson, formerly of Area, and Dr. Henri E. R. Altenloh of Chicago. The former is now serving a life sentence in the Joliet penitentiary and his license was revoked for gross unprofessional and dishonorable conduct. The license of Dr. Altenloh was revoked because of the use of alleged false and fraudulent statements in advertising matter by which he attempted to obtain money and practice.

Chicago

Personal.—Dr. Myron E. Lane, at present a member of the staff of the Chicago Municipal Tuberculosis Hospital, has been appointed medical director and superintendent of the Jasper County Tuberculosis Sanatorium, Webb City, Mo.

Industrial Surgeons' Association.—The organization of an Industrial Surgeons' Association to be affiliated with the Chicago Medical Society is contemplated. Dr. George D. J. Griffin is temporary chairman, and Dr. Horace C. Lyman, temporary secretary of the new organization.

Tuberculosis Society Meeting.—The thirty-ninth meeting of the Robert Koch Society for the Study of Tuberculosis will be held at the City Club, April 19, at 8 o'clock, when Dr. Lawrason Brown of the Trudeau Sanatorium, Saranac Lake, N. Y., will read a paper on "The Diagnosis of Intestinal Tuberculosis." A dinner will be given Dr. Brown at 6:30, at the City Club.

Institute of Medicine.—At the meeting of the Institute of Medicine of Chicago, April 16, at the City Club, Prof. R. A. Millikan, professor of physics at the University of Chicago, one of the most active experimentalists in the field of electron research and vice chairman of the National Research Council during the World War, presented a paper on "Twentieth Century Contributions to Our Knowledge of the Atom."——From a source that for the present must remain unknown, the sum of $250 annually has been offered to the Institute of Medicine of Chicago for an annual lecture to be known as the Pasteur Lecture.

Joint Meetings.—The Chicago Medical and the Chicago Urological societies, met in joint session April 14, when papers were presented by Dr. Irvin S. Koll on "Urinary Calculi"; by Dr. Robert H. Herbst and Alvin Thompson on "Vasotomy," a lantern slide demonstration of technic; by Dr. Louis E. Schmidt, on "Streptococcus Infection in Urology"; and by Drs. Gustav Kolischer and Joseph Eisenstaedt on "Unilateral Nephritis."——A joint meeting of the Chicago Neurological and Chicago Pathological societies was held April 12 at which Dr. Fred T. Rogers of the University of Chicago presented a paper on "The Relations Between Arterial Blood Pressure, Heat Regulation and the Cerebral Hemisphere"; Dr. G. W. Bartelmez of the University of Chicago, one on "The Morphology of the Synapse in Vertebrates," and Dr. S. Walter Ranson of Northwestern University Medical School, one on "Studies on the Sympathetic Nervous System."

INDIANA

Personal.—At the annual banquet of the Military Order of Foreign Wars held in Indianapolis, April 6, Col. Carleton B. McCulloch was elected surgeon, and Lieut. Morris G. Fuller, secretary; the latter succeeds Major Frank W. Foxworthy, resigned after fifteen years' service.

New Building for Sanatorium.—Sunnyside, the Marion County institution for the treatment of tuberculosis, located near Indianapolis, has been given $350,000 by the county council to be used in the construction of new buildings. An infirmary with a capacity of seventy-five patients, a children's cottage of a forty-five bed capacity, and a superintendent's residence will be built. Work is to begin at once. Several months ago $100,000 was appropriated for a service building and a power house, and these buildings are now nearing completion.

Epileptics in Indiana.—The board of state charities reports that there are at present 1,020 epileptics in the various public institutions of the state: in the five state hospitals for the insane, 266; schools for feebleminded youth, 212; village for epileptics, 371, and in county poor asylums, 171. Of the total number, 366 are insane, 548 feebleminded and 106 without marked mental deficiency. Men and boys number 602, and women and girls, 418. The epileptics are thus classified by ages: under 16 years old, 72; from 16 to 45, 617, and over 45 years, 331. Eighty-five of the ninety-two counties are represented at the village for epileptics. According to estimates there are 4,123 epileptics in Indiana, and of this number about 25 per cent. are receiving proper care from the state.

MAINE

Health Union Organized.—The first health union to be formed in the state has just been organized by the towns of Milford, Old Town, Bradley, Orono and Veazie under the name of the Motbov Health Union. A committee of six, two from Old Town and one from each of the other towns, conducts the affairs of the union, and a full-time health officer has been appointed. The organization of this health union is unique in Maine health history, for though such cities as Portland, Lewiston, Auburn and Bath employ full-time health officers, and the little town of York, unassisted except by the state appropriation of $800 also supports a full-time officer, no attempt has previously been made to create a union of towns.

MASSACHUSETTS

Course in Early Diagnosis of Tuberculosis.—A course in the early diagnosis of pulmonary tuberculosis and methods of treatment will be given under the auspices of the Wachusett Medical Improvement Society at the Rutland State Sanatorium. Lectures will begin Thursday, May 20, and continue Thursday of each week until June 24. Those giving lectures include Drs. George N. Lapham, Rutland; Bayard T. Crane, Rutland, and these members of the sanatorium staff: Drs. Ernest B. Emerson, Rutland, superintendent; Leon A. Alley, Rutland, assistant superintendent; David E. Mann, Rutland; Halbert C. Hubbard, Auburn; William B. Davidson, Pawtucket, R. I., and Mary E. Gaffney, Providence, R. I. The object is to promote early diagnosis and control of pulmonary cases. The course will be open to all physicians. The facilities at Rutland are ample for illustrating any phase of the subject. There will be no charge for tuition. For further information address Dr. Ransom A. Race, secretary, Paxton, Mass.

MICHIGAN

Personal.—Dr. Don M. Griswold, Detroit, director of the medical service for the Detroit City Board of Health and professor of hygiene and preventive medicine at the Detroit College of Medicine and Surgery, has been appointed professor of hygiene and preventive medicine in the State University of Iowa, Iowa City, and state epidemiologist, succeeding Dr. Edward G. Birge, deceased.——At the last meeting of the Institute of Medicine of Chicago, Dr. Victor C. Vaughan, Ann Arbor, was elected an honorary fellow.

MISSISSIPPI

Murderer of Physician Sentenced.—A verdict of guilty as charged and carrying the death penalty was brought in by a jury, March 27, against Jesse S. Watts, charged with the murder of Dr. D. S. Alverson, Vicksburg.

State Gets Vicksburg Hospital.—The mayor of Vicksburg has been authorized to sign a resolution by which the Vicksburg Hospital may be conveyed to the state with the provision that when the state abandons the use of the property as a hospital the property shall revert to the city.

Women in Social Hygiene Campaign.—The United States Public Health Service cooperating with the state board of health has procured the services of Drs. Lenna L. Meanes, Des Moines, Iowa; Bessie Florence L. Meredith, Watertown, Mass.; Hannah Morris, West Chester, Pa., and Jeanette H. Sherman, Ridley Park, Pa., who have been employed by the Y. W. C. A., and have had experience in social hygiene work in the eastern and central states. They will come to Mississippi for a series of lectures and conferences with the object of awakening the women and girls of the state to a realization of their responsibility and power for improving social conditions, and raising standards of health in their own communities, to put the facts before them and to help them to organize for definite action in fighting disease by advancing health through health education, and supervised recreation.

MISSOURI

New Officers.—Howard County Medical Society at its annual meeting held in Glasgow, March 19, elected the following officers: Dr. Elbert King, New Franklin, president; Dr. W. E. Williams, Fayette, and Walter M. Dickerson, Armstrong, vice presidents, and Dr. Charles W. Watts, Fayette, secretary-treasurer.

Personal.—Dr. Ross A. Woolsey, St. Louis, has been appointed chief surgeon for the St. Louis and San Francisco system, succeeding Dr. George W. Cale, Jr., resigned. Dr. Woolsey has been first house surgeon for the Frisco system for the last eight years.——Dr. Karl E. Baker, Carthage, has been appointed state commissioner of health for Jasper County.

NEW JERSEY

Personal.—Dr. Marcus W. Newcomb, Brown's Mills, has been elected superintendent of the Burlington County Sanatorium for tuberculosis.

Newark Physicians Attack Volstead Act.—At a conference between the mayor and physicians of Newark, it was decided to oppose the Volstead act which limits the prescription of liquor in the treatment of illness.

Illegal Practitioners Prosecuted.—James Baker, Atlantic City, and Thomas G. DiSanti have been convicted under the New Jersey Medical Practice Act of practicing medicine without licenses. Each paid the penalty of $200 and costs. ——Minnie Usserow, Passaic, a licensed midwife, was found guilty of practicing medicine without a license and fined $200 and costs.

Smallpox in Belleville.—On account of the prevalence of smallpox in Belleville, all churches, motion picture theaters, and places of public assembly were ordered closed. Up to the present time, there have been thirty-four cases of smallpox reported. Fifteen of the patients are in the County Isolation Hospital, Soho, and the remainder are under quarantine in their own homes.

Oppose Medical Bills.—Representatives of the Medical Society of the State of New Jersey met with the senate public health committee, March 22, to voice their protests against the new chiropractic law and the Hyland bill, which allows osteopaths to practice medicine and surgery without educational qualifications equivalent to those required of physicians, against the senate bill which provides for drugless therapeutists, and the bill which requires physicians to register annually. The physicians favor the senate bill to put all practitioners under the control of the State Board of Medical Examiners, and the certified milk bill, which will give the state control over certified milk for the use of children.

NEW YORK

After-Care Sanatorium for Poliomyelitis.—Public spirited people in Ithaca, Hornell, Corning, Cortland and Bath have taken action to secure quarters in Ithaca for a permanent sanatorium for the after-care of those who have had poliomyelitis.

Lake Keuka Physicians Meet.—The twenty-first annual meeting of the Lake Keuka Medical and Surgical Association will be held at Keuka College, Keuka Park, July 29 and 30, under the presidency of Dr. Alfred W. Armstrong, Canandaigua.

County Laboratory in Amsterdam City Hospital.—The Montgomery County Laboratory is to be established in the Amsterdam City Hospital. Alterations are being made in the hospital building for the purpose of providing suitable housing accommodations for this new laboratory.

Personal.—Dr. Fred M. Meader, director of the division of communicable diseases of the New York State Department of Health, has been granted an indefinite leave of absence in order to accept an appointment as surgeon in the U. S. Public Health Service. Before entering the service he will be associate in epidemiology in the School of Hygiene and Public Health, Johns Hopkins University, for the remainder of the collegiate year.——Dr. Ralph E. Robinson, Nunda, has been appointed to the state laboratory staff.

Protects Public Against Fake Remedies.—The village of Athens has incorporated into its sanitary code a regulation providing that no corporation, association, firm or individual other than licensed pharmacists and physicians shall sell or offer for sale in the village of Athens any medicine or so-called remedies, or any so-called medical appliances, unless before offering their commodities for sale they shall receive a permit from the local health officer. Any wilful violation of this regulation is punishable by a fine of $50 for each offense.

Child Welfare Laws.—On the recommendation of the conference on child welfare held in Albany last October, a bill has been introduced in the state legislature proposing a commission for the codification and unification of the laws relat-

ing to the protection of children. The commission will investigate the operation and effect of all laws affecting children, ascertain any overlapping and duplication, and will recommend to the legislature such remedial legislation as may appear necessary for unification of the laws and concentration of agencies dealing with child welfare.

The Cotillo Bill.—Senator S. A. Cotillo has introduced a bill into the New York legislature regulating the prescription and sale of narcotic drugs. This bill is modeled on the federal law and does away with the necessity of becoming familiar with two sets of regulations. All the druggist has to do is to be familiar with the Harrison law and the Treasury regulations. The only exception is that the bill does provide for triplicate state order forms to be used in the purchase of narcotic drugs and regulations as to the use of these forms. These regulations will be printed on the back of these forms. The bill does away with special state requirements as to records and reports and with the special state registration of druggists, state certificates and state registration fees. The house of delegates of the Medical Society of the State of New York has approved the measure.

New York City

Personal.—Dr. Harry Plotz, Brooklyn, has been sent to Poland by the joint distribution committee of the American Jewish Relief Funds to combat the typhus plague there.—— Dr. T. Mitchell Prudden has been reappointed a member of the public health council of the New York State Department of Health.

Convalescent Camps for Soldiers.—The New York Community Service announces that arrangements have been made for the establishment of summer camps at Bear Mountain and Fire Island for the benefit of convalescent service men and other former soldiers and sailors who are taking vocational training in New York City.

Many Vacancies in Health Department.—The work of the health department is said to be seriously crippled by the many resignations that have been handed in during the past six months. From July 1 to Dec. 1, 1919, there were 233 resignations, an average of one person a day. Most of these employees have resigned because they could command higher salaries elsewhere.

Organizations Unite to Fight Tuberculosis.—Various organizations in this city interested in fighting tuberculosis met at the New York Academy of Medicine, April 7, and decided to pool their intelligence, experience and equipment in order to carry on an intensive educational campaign against tuberculosis. They propose to make a survey of the city and establish auxiliaries in every existing clinic. Dr. T. L. Lloyd, vice chairman of the auxiliaries in the Brooklyn district, presided at the meeting. When the work of these various organizations is coordinated, duplication of effort will disappear and there will be a standardization of methods both in the handling of cases and in the after-care.

Formation of Caduceus Post of the American Legion.—On April 6 an amalgamation of the Medical Department Post of New York and of the Harry D. Gill Post of the American Legion took place in New York City. The great majority of the members are physicians. It has been decided to solicit other physicians to join this Post, either as regular or associate members (the latter applies to those who are active members of other posts). The following officers have been elected: president, Howard Fox; vice presidents, Harlow Brooks, George E. Maurer and Graeme M. Hammond; secretary, Samuel Bradbury; treasurer, William F. Cunningham, and county delegates, Harlow Brooks and Charles J. Imperatori.

NORTH CAROLINA

Failed to File Birth Certificate.—For failure to comply with provisions of the state vital statistics law by refusing to file birth certificates, Dr. Henderson Irwin, Eureka, is said to have been convicted in the local court of Fremont, March 15, on two counts and fined $15 in addition to the costs of $7.50.

Health Officers to Meet.—The tenth annual meeting of the North Carolina Health Officers Association will be held at Charlotte, April 19, jointly with the meetings of the state medical society and the state hospital association, under the presidency of Dr. Everett F. Long, Lexington, the subject of whose address will be "Coordination of Health Work—Intra-Governmental and Extra-Governmental."

State Medical Society Meeting.—The sixty-seventh annual meeting of the Medical Society of the State of North Carolina will be held in Charlotte, April 19 and 20, under the presidency of Dr. Carl V. Reynolds, Asheville. Dr. Watson S. Rankin, Raleigh, will deliver an address on "State Medicine"; Dr. Benjamin S. Warren, Washington, D. C., will speak on "Social Insurance," and Dr. William L. Clark, Philadelphia, will give an illustrated lecture on the "Treatment of Malignant Disease."

OHIO

Lima Entertains Physicians.—Physicians within a radius of 50 miles of Lima attended the medical and surgical clinics held at St. Rita's Hospital, Lima, April 6. Dr. Dean D. Lewis, Chicago, spoke at the evening session.

Filtration Plants to Be Constructed.—It has been decided to build water filtration plants at Delaware, Greenfield, Eaton and Fremont. Plants at Shelby, Wadsworth and Ashland are nearing completion. Contracts will soon be completed at Delaware and Wauseon.

Collaborating Epidemiologists Appointed.—The U. S. Public Health Service has appointed 140 health commissioners of Ohio as assistant collaborating epidemiologists. This appointment gives them the privilege of using frank mail for their morbidity reports.

Personal.—Dr. Orrillus M. Corson, state Americanization director, Columbus, has resigned on account of ill health.—— Dr. Albert H. Haworth, West Milton, has been appointed full-time health officer of Miami County, excepting the cities of Piqua and Troy.——Dr. Charles G. Augustus, health commissioner of Springfield for three years, has resigned.——Dr. Henry J. S. Dickson, Mechanicsburg, has been appointed full-time health commissioner of Champaign County.

Public Health Nurses.—There are at present 405 public health nurses that work in the state, not including nurses employed in industrial plants. This gives one public health nurse to every 14,320 population. Of the eighty-six counties of the state, thirty-three have, as yet, no nursing service. Twelve city and ten county boards of health now employ a total of seventeen nurses; city boards of education employ twelve, and one county board has a nurse. Altogether school boards are employing fifty-nine nurses.

SOUTH CAROLINA

New Medical Practice Act.—A new medical practice act was passed by the South Carolina legislature and was approved by the governor on March 10. The principal changes brought about by this act are: (*a*) The board is empowered to recognize certificates issued by the National Board of Medical Examiners. (*b*) The time fixed for the annual meeting of the board was changed from the second to the fourth Tuesday of June. (*c*) The registration fee was raised from $10 to $25. (*d*) It is clearly specified that practitioners of various forms of healing shall be required to take the same examination as regular physicians except in materia medica, major surgery, therapeutics and practice and must exhibit a diploma from a college approved by the board.

TEXAS

South Texas Physicians Meet.—The forty-seventh annual meeting of the South Texas District Medical Association was held in Beaumont, March 25 and 26, under the presidency of Dr. Claude C. Cody, Jr., Houston. Victoria was selected as the place for the fall meeting.

WISCONSIN

Personal.—Dr. Herbert G. Lampson, Washburn, superintendent of the Nopeming Sanatorium, Duluth, has been appointed county physician of St. Louis County.

Fire in Hospital.—Fire of unknown origin destroyed the hospital and home of Dr. Ernest G. Ovitz, at Laona, March 1. The patients were removed without casualty, and the loss is estimated at $20,000, partially covered by insurance.

CANADA

Aesculapian Club Officers.—Dr. David J. Gibbs Wishart has been elected president of the Aesculapian Club, Toronto; Dr. Alexander Primrose, C.B., vice president; Dr. Edmund E. King, treasurer (reelected), and Dr. Frederick C. Harrison, secretary.

Liquor Prescriptions.—The chairman of the Board of License Commissioners of Ontario has informed a committee

of the legislature that 80 per cent. of Ontario physicians write less than ten prescriptions for liquor in a month, and that it is the balance of from 10 to 20 per cent. who are the "official bar-tenders" of the province. That would mean that the bulk of the liquor prescriptions is issued by from 350 to 700 men.

Druggists Protest.—Prohibitions in the bill to amend the Canadian opium and drug act now before the House of Commons brought to Ottawa a large delegation of druggists last week. They object to the provisions of the bill which prevent their selling certain mixtures containing small but necessary quantities of opium, morphin and other narcotics unless under a medical prescription. They seek an amendment so that they may sell cough mixtures, etc., as they have always done without doctors' prescriptions.

Hospital News.—At a meeting called by the Canadian National Committee on Mental Hygiene in Toronto a few days ago, resolutions were passed favoring the establishment of the proposed new Reception Hospital for Toronto, contiguous to the University of Toronto and the Toronto General Hospital. Last year fifty-four mental cases were sent to the hospital for the insane after passing through the hands of the police.——The establishment of a general hospital for the border towns near the Detroit River is being agitated. It is likely that it will be established at Windsor, Ont.

Personal.—Sir Thomas G. Roddick, Montreal, and wife have returned after spending the winter in Florida.——Dr. Newtown A. Powell, Toronto, is president, and Dr. John N. E. Brown, Toronto, is secretary of the Chengtu Medico-Dental College Project in Canada.——Dr. David Fuller McKinley, C. A. M. C., formerly of West China, has commenced practice in Toronto.——Dr. John L. Todd of McGill University, with Dr. Simeon B. Wolbach of Harvard Medical School, has gone to Poland to study typhus fever. They are working under the Red Cross.——A banquet was recently tendered to Dr. George A. J. Glionna, Italian consul in Toronto, for his patriotic work among Italians there during the war.——Dr. Charles J. Copp, Toronto, was recently presented with a gold watch and chain for his work in connection with the St. John Ambulance Brigade of which he is assistant commissioner in Toronto.——Dr. James Beatty, Toronto, has been appointed pathologist of the General Hospital, Regina, Saskatchewan.——Dr. Russell L. Parr, Toronto, formerly captain in the department of soldiers' civil reestablishment, accused of defrauding the Canadian government of $2,500, has been acquitted.——Dr. Edgar C. Barnes, for fifteen years assistant medical superintendent at the Homewood Sanitarium, Guelph, Ont., has been appointed medical superintendent of the hospital for mental diseases at Selkirk, Man.

GENERAL

Medical Book Plates Wanted.—THE JOURNAL will be glad to receive copies of the book plates of physicians, for use in a review of the subject. Copies of the book plates of noted physicians, now dead, will be especially appreciated. Mark envelop "BOOK PLATE."

Gift to College of Surgeons.—The Carnegie Corporation has given to the American College of Surgeons $75,000 to be used for hospital standardization. Four years ago, it made a gift of $30,000 for the same purpose, making a total of $105,000, this amount being supplemented by funds of the college.

Conference Regarding Service Men.—The committee representing welfare agencies for disabled former service men of Indiana, Kentucky and Ohio held a meeting in Indianapolis, April 10, at which Dr. Thomas B. Victor Keene, Indianapolis, chairman of the hospitalization committee, and Dr. Henry Kennon Dunham, Cincinnati, chairman of the education committee, made their reports.

Legislature to Permit Transmission Through Mails of Poisons.—The House of Representatives has passed the bill permitting the transmission of poisons, medical or chemical compositions, through the mails, under regulations prescribed by the Post Office Department. The bill permits manufacturers or dealers in such products to transmit them to licensed physicians, surgeons, pharmacists and druggists.

Gift to Post Graduate Hospital Endowment Fund.—The New York Post Graduate Medical School and Hospital reports a gift of $100,000 from Mrs. Henry R. Rea of Pittsburgh toward the endowment fund of $2,000,000 which the institution is striving to raise. It is reported, also, that Mr. James C. Brady of New York has given $50,000 toward the first million and has pledged $125,000 toward the second million. Mr. Vincent Astor has given $50,000 toward the first million and an additional $75,000 toward the second million.

Examination for Canal Service Physician.—The United States Civil Service Commission announces an open competitive examination for physician, Panama Canal service, May 5 and July 7, at various places throughout the United States. The entrance salary is $200 a month with promotion to $300 or higher for special positions. Both men and women are eligible. They must be unmarried, must be graduates of a recognized medical school, and must have had at least one year's graduate hospital experience. Application should be made to the Civil Service Commissioner, Washington, D. C., or the secretary of the local United States Civil Service Board.

Centenary of Medical Missions.—The centenary of medical missions was celebrated generally throughout the United States from March 28 to 31, and at the same time observance was made of the fiftieth anniversary of the work of the first woman missionary. The pioneer medical missionary was Dr. John Scudder, who went to Ceylon in March, 1820, and the pioneer woman medical missionary was Dr. Clara Swain, who went to India in 1870. It was pointed out that forty-eight members of Dr. Scudder's family followed him into the mission field and that three of the fourth Scudder generation had just gone to begin their life work in India. At present there are about 1,100 medical missionaries working in 702 hospitals and 1,156 dispensaries.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hospital for Sick Children, Toronto, Ont., $1,000 to endow the McRoberts' cot, by the will of Mrs. Ruth McRoberts.

Philadelphia Orthopedic Hospital a bequest of $5,000 from the residuary principal of the estate of Mrs. John M. Walton to establish a free bed in memory of her husband.

American Red Cross and St. Luke's Hospital, New York City, chief eventual legatees of the estate of James A. Scrymser, appraised at $2,923,040 to become operative on the death of his widow.

Chengtu Medico-Dental College Project in Canada, $7,500 by the will of Dr. Richard A. Reeve, Toronto.

St. Vincent's Hospital, New York City, $100,000; Cancer Hospital, New York City; Industrial Home for the Blind, Brooklyn, and Brooklyn Hospital, each $25,000; Brooklyn Home for Consumptives, $20,000, by the will of Daniel G. Carroll.

FOREIGN

Medical Journal's Personally Conducted Tour to Paris.—A Spanish medical journal, the *España Médica* of Madrid, has organized a tourist party for its subscribers, with the collaboration of a tourist agency for the trip, and of the dean of the Paris Faculté de médecine for the scientific side of the trip. The expense for the twelve days is 750 pesetas. Three days are to be spent inspecting the devastated regions from Verdun to Reims. The journal states that if it were not for the prevailing rates of exchange the price of such a trip would be prohibitive at present.

Fourteenth French Medical Congress.—The Association of French-Speaking Physicians invites physicians to attend the Fourteenth Congrès français de médecine to open at Brussels, May 19, 1920. The first of the three topics to be discussed—syphilis of the cardiovascular apparatus—is to be presented by Bayet of Brussels, Etienne and Spillmann of Nancy, and Vaquez and Laubry of Paris. The second—lipoids in pathology—will be presented by Chauffard, Laroche and Grigaut of Paris, Linossier of Vichy, and Zunz of Brussels. The therapeutic value of artificial pneumothorax will be discussed by Burnand of Leysin, Küss of Agincourt, and others with much experience. The fee is 40 francs for non-members of the association.

Pan-Hellenic Congress of Hygiene.—The *Grèce médicale* announces that the long planned Congress for Hygiene and Demography is now organized to convene at Athens, April 25 to 30, 1921, the week of the celebration of the centennial of the independence of Greece. There are to be six sections, and membership is open to all interested in public and private hygiene, welfare work, and similar great social questions. The fee is 15 francs for regular members and 10 francs for associates. In connection with the congress there will be an international exhibition to remain open for two months. Prof. G. Phocas is chairman of the committee of organization of the congress, and the secretary is Prof. P. J. Rondopoulo, 14 rue Nikifouro, Athens, Greece.

Government Commissions in the Netherlands for Investigation of the Treatment of the Sick by the Unqualified.—THE JOURNAL described about a year ago the report of the medical commission appointed by the state in the Netherlands in 1915 to study the methods and practices of various cults. After exhaustive investigation the report presented concrete evidence that no essential benefit resulted from any of the methods and in some instances actual harm was done. A commission of eminent jurists was appointed at the same time. They have taken three years to prepare their report, and it has just been presented. The editor of the *Nederlandsch Tijdschrift voor Geneeskunde*, Prof. G. van Rijnberk, publishes their report with comment. The lawyers in their preamble state that their advice was asked only in the matter of suggesting modifications in the law, and not whether it is desirable to make such modifications. Consequently, they say, the report does not express any personal opinion of the jurists in this matter, but is restricted to the legal wording of the modifications to admit the unqualified to practice.

Friedmann in the Limelight Again.—The German medical journals for the last few months have been much exercised over the way in which the Kultusminister K. Haenisch (minister of public instruction), and the Prussian general assembly have been promoting Friedmann's "Preventive and Cure for Tuberculosis." Friedmann has been appointed professor extraordinary (without any consultation with the medical faculty), and part of a military hospital has been placed at his disposal for treatment of the tuberculous and to train students in the method. Nearly every German journal contains some report of experiences with the "Cure." Some of the writers complain that Friedmann insists on selecting the patients to be allowed the treatment, and refuses to let any other measures be applied with it. The *Nederlandsch Tijdschrift voor Geneeskunde* of Amsterdam quotes this same Minister Haenisch, speaking in the lower house two years ago, when he cited the Friedmann remedy as an example of "an arrant humbug which has the advantage that the inventor in the meanwhile has become a rich man." Our Netherlands exchange adds, "The psychanalysis of this change of view on the part of the minister of public instruction might be worth studying out." The *Deutsche medizinische Wochenschrift* for Dec. 18, 1919, referred to the matter as showing the lamentable way in which internal politics is encroaching on the domain of science, saying, "Even the sharpest critic of things as they used to be will have to admit, if he is truthful, that a minister of public instruction in former times would not have retained his position for one hour after delivering such a speech as Haenisch's recent speech, followed by the 'interview' in the evening paper (Haenisch and Friedmann's *Moniteur*)." It quotes further the *Medizinische Klinik* that it is "hard indeed that at a time when Germany is so impoverished in worldly goods, such action should threaten to lower the prestige of German science." The Prussian general assembly has recently voted to appoint a representative commission to test the remedy. It was said at first that no one who had previously tried the remedy should be on this commission but this principle was not adhered to. Twenty members were first appointed, mostly leading members of the profession, but others have been added later, including Friedmann himself, Prof. Kruse, who has charge of the bacteriologic control of the preparations of the remedy, Dührssen, an ardent advocate, and others. The *Deutsche medizinische Wochenschrift* comments that the handing over of the hospital to Friedmann and empowering him to train medical students in the method of treatment—before the commission has made any report on the value of the "cure,"—"must be regarded as another one of the many inconsistencies from which the people is now suffering so much. . . . However, it was a favorable turn of fate that Friedmann did not succeed in his desire to have the Kaiser-Wilhelms-Akademie placed at his disposal, notwithstanding the efforts of Haenisch, Scheidemann and his other backers (gönner)." Another instance of what the *Deutsche medizinische Wochenschrift* calls the "hitherto unknown by-effects of a method of treatment," is a suit for damages brought by the editor of the *Münchener medizinische Wochenschrift* against another editor, Dr. Bachmann, of the *Biologische Medizin*, who had accused the former of "suppressing the free expression of opinion" by rejecting certain articles sent in for publication. The *Deutsche medizinische Wochenschrift* remarks that this lawsuit is a grateful opportunity to show the courts the absurdity of this complaint. The entire chorus of the "suppressed" will be presented to the judge.

LATIN AMERICA

Personal.—Dr. Rafael Otamendi of Caracas, Venezuela, has arrived in New York accompanied by his wife.——Dr. Rafael Medina y P., Quito, Ecuador, has arrived in New York on his way to France.

Experimental Hygiene at Montevideo.—The *Brazil Medico* states that the congress of Uruguay appropriated funds recently for the organization of an institute for experimental hygiene at Montevideo.

Plague at Curityba.—Some dead rats having been found in a certain quarter of Curityba, they were examined for plague bacilli with positive results, and the governor of the state telegraphed at once to the chief of the national public health service asking that a sanitary brigade be sent there at once before any clinical cases of plague develop.

Monument to Dr. Núñez.—The building of the monument to Dr. Enrique Núñez, former secretary of sanitation of Cuba, for which a fund of $12,000 has been collected, will begin soon. The monument will be built at the entrance of the hospital, Calixto García, and it is expected that it will be unveiled on September 15, which is the fifth anniversary of Dr. Núñez' death.

American Physician Needed in Chihuahua.—Mr. Emmet W. White of the insular and foreign division of the American Red Cross has received a letter from the American consul at Chihuahua stating that the only foreign physicians in Chihuahua, one American and one Englishman, have died this year and that there is an opportunity for an American physician, especially one who speaks Spanish. The American consul will be glad to correspond with any one who might consider locating there.

Riots Among Medical Students in Argentina.—The conflict between the professors and the students of the University of La Plata, reached its climax recently, when the medical students provided themselves with revolvers and opened fire on the school, killing one of the students, who was taking his examination at the time. A number of the students were arrested by the police. The University of La Plata is one of the three national universities, in addition to the two state colleges, and was the last organized of those existing in the country.

"Prophylaxia Rural."—This is the official name of the service that has been undertaken on a large scale in Brazil to carry the campaign against malaria, helminthiasis, etc., into the rural districts. The *Brazil Medico* is publishing the reports from different stations as they have been established. In one week recently, at one of these stations 1,284 persons were examined and 65.9 per cent. were found to have malaria or other chronic disease. At another station 94.11 per cent. were found infested with helminths and 1,186 persons were given treatment during January.

Deaths in the Profession.—Dr. **L. R. Cassinelli,** founder of the Cassinelli Sanatorium at Buenos Aires, and physician to the Hospital San Roque.——Dr. **R. Leal de Sá Pareira** of S. Paulo.——Dr. **O. Vieira de Britto** of Bello-Horizonte, president of the city council.——Dr. **Rivadavia Correa**, senator from his state, Rio Grande del Sul, and long leader in the movement for raising the standards and equipment of the medical schools of Brazil.——Dr. **J. Maceo Chamorro,** at Puerto Padre, where he was chief of the local public health service, one of the oldest physicians of Cuba.

Mexican Commission in the United States.—Drs. Edmundo Aragón, secretary of the Department of Health of Mexico, and Nicolás Amerena, director of the diagnostic laboratory of the same department, are being sent to the United States in order to secure cultures of plague, yellow fever, typhoid fever, cholera, pneumonia and all other infectious diseases, the etiologic agents of which are known. It seems that cultures of micro-organisms lose their virulence very soon in Mexico, and it is necessary to replace the supply quite often. While in the United States, Drs. Aragón and Amerena also intend to purchase a collection of wax models, showing different aspects of the most common diseases. They expect to visit New York, Washington, Chicago and New Orleans, inspecting at the latter city the methods of ship disinfection in force.

CORRECTION

Wrong Price Published in Advertisement of Oxford University Press.—In the advertisement of the Oxford University Press, published in THE JOURNAL for April 10, through an error, the Oxford Loose-Leaf Medicine was quoted at $52.50. It should have read $62.50.

Government Services

MEDICAL OFFICERS, UNITED STATES NAVY, RELIEVED FROM ACTIVE DUTY

ILLINOIS

Bloomington—Howell, H. L.
Metropolis—Thane, B.

KANSAS

Atchison—Connor, S. W.

MASSACHUSETTS

Boston—Gaetani, A. L.

NEW YORK

Brooklyn—Ruger, G. W.
Fair Haven—Griggs, L. H.

Health Conditions of the Army

For the week ending April 2, progressive improvement in the health conditions among the troops is shown by the continued decrease in the admission and noneffective rates. There is a slight increase in the number of new cases of measles, scarlet fever, malaria, diphtheria and pneumonia, although none of these diseases are epidemic at any camp or station. As a whole, the report for the week shows the number of new cases of epidemic diseases to be about as low as could be expected. There were eighteen deaths from disease reported during the week: tuberculosis was reported to have caused seven and pneumonia four. Among the American forces in Germany the health conditions continue satisfactory.

Public Health Service Presents Building Requirements

The Public Health Service has presented to the Committee on Public Buildings and Grounds of the House of Representatives an analysis of prospective hospital building requirements for ex-service men. Twenty-five million dollars is asked for construction or purchase of necessary hospital buildings, $15,000,000 of which shall be expended during the present year. These building requirements of the Public Health Service are based on the report of the chief medical adviser of the War Risk Insurance Bureau. This report indicates that the Public Health Service will be required to take care of 30,000 patients during the ensuing year. These patients are classified as: general, medical and surgical, 7,200; tuberculosis, 12,400, and neuropsychiatric, 11,000, a total of 30,600. The hospital building needs of the Public Health Servic are most urgent, and the Committee on Public Buildings will at once determine the amount of money which will be appropriated for this work.

Army Hospital Internship

The Surgeon-General of the Army announces that internships of one year in some of the large general hospitals of the Army are opened to medical students and graduates of Class A medical schools who obtain a high standing and are indorsed by the medical school authorities. Satisfactory completion of the year in the Army General Hospital will be accepted as qualifying for commission in this regular Army Medical Corps without further professional examination.

The status of the intern is that of a civilian, and the pay is $60 a month with quarters and rations.

The general hospitals of the Army are organized into three services: medical, including psychiatric and contagious diseases; surgical, including eye, ear, nose and throat, venereal, gynecologic, obstetric and the roentgen-ray service; laboratory, including clinical microscopy, pathology, serology, bacteriology and chemistry. Some of the medical schools requiring the fifth or hospital year for a diploma have already agreed to accept the hospital year in the Army general hospitals as the equivalent of their hospital year, and it is expected that state boards requiring hospital experience as a requisite for license will likewise accept that obtained in the Army. Applications for this internship should be made by letter direct to the Surgeon-General and give the following information: full name; present address; home address; birth place (if foreign, state whether a citizen of the United States); date of birth; education before entering medical school; medical school attended; date of graduation or prospective graduation, and statement of any physical defect that might disqualify applicant in physical examination.

A circular of information will be sent on application to the Surgeon-General's Office. A similar circular is in the possession of each state medical examining board.

Foreign Letters

BELGIUM

March 25, 1920.

The Medical Press

The great difficulties with which all Belgian industries are struggling seriously impede national reconstruction. The mining and metallurgic industries have been able to overcome obstacles which seemed insurmountable, despite repeated strikes, which were on the whole of short duration, and these industries are now again beginning to assume their customary place in the business world. The shortage of manual labor and the repeated strikes have not assumed such proportions that they would have proved fatal to the prosperity of Belgium. Strictly speaking, there is no prosperity in Belgium, but after the cataclysm which burst over the whole nation, one can be deemed fortunate to witness the present renaissance under conditions which can be considered favorable. This hopeful outlook does not altogether apply in regard to the medical press. In those countries in which scientific publications are not published directly through liberal subsidies from an official department, or where they are not equally as firmly established as in a great country like the United States, the shortage of necessities and the mounting cost of labor exert a very acute influence on the fortunes of scientific periodicals.

PRINTERS' STRIKE

A recent strike of the printers of Liége, which has just barely been settled, interrupted the publication of many periodicals for from three to four months. In the same way, the book industry has been seriously affected. If one adds to this the difficulty of procuring paper, one will readily understand that it is not always easy to guarantee uninterrupted appearance of many periodicals. Furthermore, new difficulties have lately surrounded the manufacture of paper. The decline of exchange does not permit Belgian printers to obtain the necessary supplies abroad, especially in Holland. In Germany, the exportation of wood and paper has been prohibited. France has smaller reserves than our own. Under these circumstances, we are obliged to be content with what little paper we manufacture. The supply does not equal the demand—far from it—and the costs of manufacture have increased almost tenfold as compared with prewar figures.

BIOLOGIC PUBLICATIONS

It is not surprising, therefore, that the purely scientific reviews appear at long intervals. The *Archives de biologie*, which publishes the more important works of the laboratories under the editorial supervision of Professor Brachet of the faculty of medicine of Brussels, is among those suspended for more than four months The same is true of the *Archives de physiologie*, edited by Professor Fredericq of the faculty of medicine of Liége, which was affected by the same strike. The *Archives de pharmacodynamie*, under the editorship of Professor Heyman of the faculty of medicine of Ghent, has issued only two or three numbers since the armistice. The *Archives internationales de médécine légale*, founded by Professor Lorin of Liége—who died in March, 1919, leaving unfinished a whole series of excellent works—has not resumed publication.

The *Académie royale de médecine* alone continues, sometimes with considerable delay, publication of the reports which are deposited with its bureau and are accepted after examination. These must always be original contributions, as they deal almost exclusively with such phases of general biology as are not of direct interest to the medical practitioner. The latter has at his disposal the local weekly jour-

nals, publication of which has now become more regular. It should not be forgotten, moreover, that almost every physician subscribes for one of the large French weeklies, such as *Presse médicale, Paris médical,* and *Journal des praticiens.* Besides these reviews, which circulate through almost the whole of Belgium, as well as the Flemish section, there are many local journals

BELGIAN MEDICAL PUBLICATIONS

Le Scalpel is issued at Brussels. Before the war, *Le Scalpel et Liége médical,* combined, was published at Liége as a purely local review At the beginning of 1919, the editorial staff was divided: some tried to give the journal a national character, and by shunning excessive provincialism they hoped to make *Le Scalpel* the official organ of the Belgian medical federation. This attempt was only partially successful, and *Le Scalpel* has become more especially a sectional organ for the central part of Belgium. Besides this, *Liége médical* has reappeared. Its debut was inauspicious, for the first number had hardly been issued when the strike interrupted publication for a considerable time. Despite the setback, however, its success seems assured, and several numbers which have since appeared are not lacking in interest. Both of these are weekly periodicals, devoted primarily to papers of immediate practical value, not long contributions, but mainly clinical notes and articles on general medicine. In addition, they frequently publish notes of interest to the medical profession, some society proceedings and medical news items.

Besides these two journals, the *Revue médicale de Louvain* remains the organ of the Catholic school. It has a purely didactic aim and continues to impart to the former pupils of the faculty the teachings which they received at their alma mater. It publishes, finally, the lectures of the professors of the faculty.

Ghent also has its medical bulletin, the *mémoires de la Société de médecine,* which records the papers and discussions of this society.

The *Archives médicales belges* is one of the most important medical journals of Belgium. Before the war, it was issued in a smaller format. The war, which had interrupted its publication, was instrumental in its revival at the battle front itself, where, after Jan. 1, 1917, there were brought together the most diverse collaborations of the Belgian medical world. Those who had gone with the army and those who rejoined it on the Yser continued to demonstrate, even through the hard years of exile, the vitality of Belgian medical science. Thanks to this continued effort throughout the war, the *Archives médicales belges,* at the time of the homecoming, was able to expand its editorial committee to include all the authorities of the four medical faculties, officers of the army medical corps, and the principal medical practitioners of Belgium. Appearing in monthly issues, it publishes original articles in all branches of medicine; each month there is a review of some general question, carefully summarizing current knowledge with bibliographic references. Under the heading "Analyses" are found many abstracts of the foreign literature. These are not arranged according to the journal in which the articles appear; each branch of medicine and each specialty are represented, and for every one of these the principal publications of the month are abstracted by a specialist. Under another heading are items of current interest and proceedings of scientific societies.

Among special journals, the *Journal de chirurgie* should be mentioned; in it are published the discussions of the Société de chirurgie de Belgique.

In a small country such as Belgium, it should be of great advantage, especially under the difficult circumstances at the present moment, to correlate all these endeavors now somewhat dispersed. There can be no question of the advisability of such a movement. But it seems that the smaller the country, the more is sectionalism carried to excess. In such a large country as the United States, where, despite diverse origins and customs, federated states have combined, this centralization has been successful—truly an interesting paradox.

BUENOS AIRES

Feb. 21, 1920.

Feeding of the Argentine Field Army

It is well known that the traditional diet of the country regions of Argentina is chiefly meat, although this custom has been considerably modified in the most populated districts. In the case of Argentine troops in the field, the medical officer, Dr. J. A. Lópes, has made recent observations in Chaco, which indicate that the soldiers receive daily 435 grams of protein, 182 grams of fat, and 201 grams of carbohydrates, making a total of 4,125 calories.

Plague Considered an Industrial Accident

Two recent decisions by different courts have established the principle that plague contracted in a plant in which rat mortality from plague should create suspicions as to its sanitary conditions, makes the employer liable to pay a compensation just as if the patient had died from an accident while at work.

Campaign Against Malaria

The National Department of Public Health is oiling on a large scale mosquito breeding places in the departments of Famaillá and Trancas of the province of Tucumán. In the same zones and also in San Pedro and Rio Chico in the province of Jujuy the department is carrying out drainage measures.

Maritime Quarantine

The insanitary conditions of almost all the ships arriving from Europe cause their detention in the port of Rio de Janeiro in order to isolate the sick and disinfect the ships. Some steamship companies have complained of this practice, as they consider as too long the periods of seven to fifteen days during which some boats have been delayed.

PARIS

March 11, 1920.

A Special Day in Aid of Large Families

On the initiative of the societies and leagues that are working to increase the birth rate in France, a special day, March 9, has been set apart on which to solicit contributions. The proceeds of the day will be distributed throughout France among such large-sized families as the most in need of assistance.

Death of Prof. G. Rauzier

Dr. G. Rauzier, professor of clinical medicine on the Montpellier Faculty of Medicine, died recently at the age of 56. He became agrégé professor in 1892, and in 1907 he was appointed professor of general pathology and therapeutics. Two years later he exchanged positions with his former teacher, Professor Grasset, becoming thus professor of clinical medicine. The last edition of the Grasset treatise on the diseases of the nervous system was put out by Grasset and Rauzier working in collaboration. In 1909, a treatise on the diseases of the aged, of which Rauzier was the independent author, was published.

The Influence of Sex on Pathology of Children

Dr. Apert, physician to the hospitals of Paris, recently published, in collaboration with M. Cumbessédès and M.

Flipo, an interesting communication on the subject of the influence of sex on the pathology of children. Aside from congenital luxation of the hip and chorea the influence of sex on the pathology of children is not marked. However, the greater frequency and the greater severity of influenza that had already been noted in young women and in women of mature age applies to young girls as well. For example, for the age group 2-9 the mortality from influenza in Paris was one and a half times as great for girls as for boys. In girls the fever is more prolonged and the complications more serious and more frequent, with the exception of epistaxis. The same is true for pertussis. Nearly all other diseases, however, show a slight excess of mortality for boys. From these facts Apert concludes that not only in matters of home training and general education but also as regards hygiene and therapeutics it is a serious error to fail to differentiate the two sexes.

The Physician as a Public Official

A medical inspector of infants and children who were the recipients of state charity, having been recalled by the prefects of three departments in which he exercised his functions, appealed to the Conseil d'état, which supported him in his contention. The Conseil d'état ruled that a physician in charge of the inspection of infants and children who were the recipients of state charity could not be considered a private physician; he represents the power of the state, and in that capacity it was his duty to see that the nurse fulfilled all the conditions required. In his official visits he represents the prefect, and, as a man of skill, it is for him to say how an infant shall be nourished. He is consequently a mandatory of the state and therefore a state official. As such he cannot be relieved of his official duties without first being informed of the act that is being contemplated, and thus be given the opportunity to demand a written copy of the charges preferred against him and to prepare and present his means of defense.

As for the physician in charge of the services in which free medical assistance is given, the situation is quite different. He is there giving medical care and is bound to his patient by the right of privileged communication. Under such circumstances the practicing physician would not be considered a state official. He is simply giving medical attention to a class of patients, in accordance with certain regulations and a special price schedule. The state in this case merely provides the medical care, and is in the same capacity as a mutual aid society or an accident insurance company.

LONDON

March 20, 1920.

Graduate Medical Education for Panel Physicians

The London Panel Committee has pointed out the necessity for the graduate education of panel physicians and the boundless opportunities afforded by the general and special hospitals of the metropolis. They suggest organization of special courses in such subjects as clinical diagnosis and treatment, radiography, tuberculosis, venereal diseases, disorders of digestion, ophthalmology, war neuroses and vaccine and serum therapy. In the months from May to September, when physicians have most time to spare, classes might be held in the evening after office hours. Classes of from twenty to twenty-five would be large enough for each member to receive some individual attention in any discussion that might and should take place after each lecture or demonstration. A course should number from eight to twelve lectures, including demonstrations. A fee of $15 would be a reasonable one for each member to pay. The value of the system is obvious if only from the point of view of individual efficiency, but there is another point—the collective efficiency of the insurance service. Changes involving the inclusion of the dependents of the present insured population are imminent. These will necessitate the physician's assuming greater responsibilities. It is hoped that in every district there may be physicians who by taking the necessary steps will become qualified to undertake some of the duties involved in one specialty or another. Classes have already been held at the Military Hospital, Rochester Row, in the diagnosis and treatment of venereal disease, and certificates signed by Lieutenant-Colonel Harrison have been issued to those considered expert in the administration of arsphenamin and similar drugs. To the holders of these, the public authorities are empowered to supply the drugs in question. It is proposed that attendance at the proposed courses shall entitle physicians to similar recognition.

The Nation's Physique

One of the results of the war is to furnish the only survey of the physical fitness of the male population of military age in this country ever made. It has now been presented to Parliament in an elaborate report by the National Service Medical Boards. The number of medical examinations during the period under review was 2,425,184, but this figure does not represent the number of men examined, as it includes reexaminations. Those examined were classed into four grades: Grade 1. Those who had attained the full normal standard of health and strength and were adjudged capable of enduring physical exertion suitable to their age. They amounted to 36 per cent. of the total. Grade 2. Those capable of only such exertion as does not involve severe strain. They amounted to 22 per cent. Grade 3. Those presenting marked disabilities or such evidence of past disease that they were not considered fit to undergo the physical exertion required for the higher grades. They amounted to 31 per cent. Grade 4. Those totally and permanently unfit for any form of military service. They amounted to 10 per cent. There are no figures to show how far this grading proved correct in the actual conditions of military service. But it can be stated that more recruits were degraded than upgraded. The figures, therefore, err on the side of overrating rather than underrating. An analysis of examinations of different groups of men between 18 and 25 years of age in one large and important district (Yorkshire) made with a view to revealing the influence of occupation on health gave the following remarkable results:

Occupations	Percentages			
	Grade 1	Grade 2	Grade 3	Grade 4
Agriculturists	71.9	15.5	8.8	3.8
Miners	68.9	15.1	10.5	5.5
Engineers	60.9	23.9	13.4	1.8
Iron and steel workers	60.2	25.6	11.2	3.0
Lace workers	45.0	26.9	22.7	5.4
Woolen trade	54.6	10.9	24.0	10.5
Tailors	33.9	21.4	33.5	11.2

It will be noticed that the miners and agriculturists show the best results. The general fall in physical fitness shown in the table is a criterion of the effects of the various occupations on the physical welfare of the workers. In the London area it was found that respiratory diseases, particularly pulmonary tuberculosis, showed an enormously high percentage in the densely populated districts of the East End. Some curious figures were given by the occupations. Thus, barbers showed the highest percentage with regard to almost every disease. On the other hand, clerks showed comparatively good results, proving that sedentary work, with due outdoor exercise, is not unhealthful. In the London area, 9.9 per cent. of the men were placed in Grades 3 or 4 on account of heart affections, and 3.1 per cent. on account of tuberculosis.

Deaths

Samuel Doty Risley ⊕ Philadelphia; University of Pennsylvania, Philadelphia, 1870; aged 75; a veteran of the Civil War; chairman of the Section on Ophthalmology of the American Medical Association in 1893; and a member of the House of Delegates in 1907; president of the American Academy of Medicine, in 1891, of the American Ophthalmological Society in 1907, and of the ophthalmological section of the College of Physicians of Philadelphia, in 1934; lecturer and assistant surgeon in ophthalmology in his alma mater from 1872 to 1879; professor of diseases of the eye, in the Philadelphia Polyclinic from 1886 to 1900 and emeritus professor thereafter; attending surgeon to Will's Eye Hospital, Philadelphia, since 1889; a member of the board of managers of the Pennsylvania Training School for Feeble-Minded; alumni manager of the University of Pennsylvania Hospital since 1896; died, April 1, following a nervous collapse.

William James Morton ⊕ New York City; Harvard University Medical School, 1872; aged 74; a pioneer in electrotherapeutics; the son of Dr. William T. G. Morton of ether fame; for nearly thirty years professor of nervous and mental diseases and of electrotherapeutics in the New York Post-Graduate Medical School and Hospital; for five years professor of diseases of the mind and nervous system in the University of Vermont, Burlington; president of the American Electro-Therapeutic Association in 1893; physician to the Department of Nervous Diseases of the Metropolitan Throat Hospital, New York City; neurologist to the Randall's Island Hospitals and the New York Infant Asylum; editor and proprietor of the *Journal of Nervous and Mental Diseases*, from 1879 to 1885; died, March 26, in Miami, Fla., from heart disease.

John D. Blake ⊕ Baltimore; College of Physicians and Surgeons, Baltimore, 1875; aged 66; vice-president of the Medical and Chirurgical Faculty of Maryland, in 1893-1894; professor of clinical and operative surgery in Baltimore Medical College; surgeon to the Maryland General and St. Agnes hospitals, Baltimore; formerly health commissioner of Baltimore; died, March 30, from heart disease.

Edgar C. Loehr, Noblesville, Ind.; Medical College of Ohio, Cincinnati, 1871; aged 69; a member of the Indiana State Medical Association; local surgeon for the Pennsylvania and Big Four systems and Union Traction Company; for two terms mayor of Noblesville; died in the Noblesville Hospital, March 29, from cerebral hemorrhage.

John Dillon Thompson, Captain, M. C., U. S. Army; St. Louis College of Physicians and Surgeons, 1897; aged 44; a member of the Washington State Medical Association; on duty at Marfa, Tex.; while on leave of absence was found dead in a hotel in Phoenix, Ariz., April 4, supposedly from an overdose of chloroform.

John Alexander Black, Cleveland; Western Reserve University, Cleveland, 1913; aged 39; a member of the Ohio State Medical Association; Lieutenant, M. R. C., U. S. Army, and discharged December 26, 1918; formerly instructor in chemistry in the University of Chicago, and in his alma mater; died March 10.

Charles H. Wagner, Minneapolis; Homeopathic Hospital College, Cleveland, 1873; aged 67; vice-president and director of the Northwestern States Portland Cement Company, Mason City, Iowa; the Trinity Portland Cement Company, Dallas, and the Northwestern Metal Ware Company, Minneapolis; died March 1.

Alexander Peter Reid, L'Ardoise, N. S.; McGill University, Montreal, 1858; L. R. C. S., Edinburgh, 1858; University of the City of New York, 1865; aged 83; formerly emeritus professor of medicine and examiner in medical jurisprudence and hygiene in Dalhousie University, Halifax, N. S.; died February 27.

Lane Mullally ⊕ Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1889; aged 53; vice dean and professor of obstetrics in his alma mater; a member of the Southern Surgical and Gynecological Association; local surgeon of the Southern Railway; died, March 25.

Elmer Melville Whitney, New Bedford, Mass.; Jefferson Medical College, 1879; aged 64; a member of the Massachusetts Medical Society and New England Ophthalmological Society; ophthalmic surgeon to St. Luke's and St. Mary's hospitals, New Bedford; died, February 27.

⊕ Indicates "Fellow" of the American Medical Association.

Thomas Stanley Crowe, Chicago; Illinois Medical College, Chicago, 1896; aged 51; a member of the Illinois State Medical Society; once physician of Cook County; Captain, M. R. C., U. S. Army, and discharged March 29, 1919; also a pharmacist; died, April 5, from cholelithiasis.

Edward Young Napier, Waverly, Tenn.; Vanderbilt University, Nashville, Tenn., 1880; University of Nashville, Tenn., 1882; aged 76; county health officer of Humphreys County and division surgeon for the Nashville-Chattanooga and St. Louis Railroad; died March 10.

Carl Augustus Meyer ⊕ Newman Grove, Neb.; University of Nebraska, Omaha, 1915; aged 30; secretary-treasurer of the Madison County Medical Society; Captain, M. R. C., U. S. Army, and discharged Sept. 12, 1919; died, February 13, from pneumonia following influenza.

Fred W. Upson ⊕ Conneaut, Ohio; Western Reserve University, Cleveland, 1882; aged 61; medical supervisor of the New York, Chicago and St. Louis, New York Central, and Bessemer and Lake Erie railroads; died, March 18, from intestinal obstruction.

Crispin Wright, Fruitland, Ida.; Denver and Gross College of Medicine, Denver, 1910; aged 37; Lieut., M. C., National Army; who served with the American Expeditionary Forces in France; died in U. S. General Hospital No. 19, Oteen, N. C., February 22.

John R. Hereford, Jr. ⊕ Major, M. C., U. S. Army, retired; Ferguson, Mo.; St. Louis Medical College, 1883; aged 58; Major and Surgeon, Thirty-Second Infantry, U. S. V., with service in the Philippine Islands; died, March 27, from cerebral hemorrhage.

Jerome Gill Atkinson, New York City; University of the City of New York, 1876; aged 76; acting assistant surgeon, U. S. Army; medical director of the Banker's Life Insurance Company of New York City; died, March 22, from influenza.

Robert Elbert Yarbraugh, Harrisburg, Ark.; University of Louisville, Ky., 1910; aged 36; health officer of Poinsett County; died in the Paragould, Ark., Sanitarium, March 20, from septicemia following an infected wound of the finger.

Frederick Charles Thompson, East Tawas, Mich.; University of Michigan, Ann Arbor, 1887; aged 53; a member of the Michigan State Medical Society; died at the home of his nephew in Mt. Clemens, Mich., March 15, from uremia.

Augustus Homer Brown ⊕ Bayside, N. Y.; College of Physicians and Surgeons in the City of New York, 1894; aged 56; for twenty years one of the police surgeons of New York City; died, April 2, from heart disease.

Helene Siverine Lassen, Brooklyn; New York Medical College and Hospital for women, Homeopathic, New York City, 1871; one of the organizers of the Memorial Dispensary for Women and Children; died, March 25.

Francis Elmer Bingham, New York City; University and Bellevue Hospital Medical College, New York City, 1913; aged 31; first lieutenant, M. C., U. S. Army, and honorably discharged, Dec. 21, 1918; died, March 25.

George W. Thompson, New York City; Eclectic Medical College of the City of New York, 1885; aged 65; professor of theory and practice of medicine and clinical medicine in his alma mater; died April 3.

Stephen Joseph Johnson, Lowell, Mass.; University of the City of New York, 1877; for two years a member of the board of aldermen, and for six years a member of the Lowell school committee; died, March 21.

John Lindahl ⊕ La Jolla, Calif.; Drake University, Des Moines, Iowa, 1888; aged 55; formerly medical director of the Swedish National Sanatorium for Tuberculosis, Denver; died, March 19.

Henry Eastwood Bickford ⊕ Memphis, Tenn.; (license, Tennessee, 1915); aged 35; in charge of the Red Cross Emergency Hospital in Memphis during the influenza epidemic; died March 21.

Alexander D. Farnsworth, Arkansas City, Kan.; University Medical College of Kansas City, Mo., 1898; aged 46; was instantly killed, January 31, by the overturning of his automobile.

Wellington R. Harring, Philadelphia; Temple University, Philadelphia, 1909; aged 42; a member of the Medical Society of the State of Pennsylvania; died, April 1, from a general breakdown.

James Miller McCready ⊕ Sewickley, Pa.; Bellevue Hospital Medical College, 1887; aged 59; died at the home of his cousin in Baltimore, March 18, from cerebral hemorrhage.

Frank Fletcher, Jenkins Bridge, Va.; Jefferson Medical College, 1869; aged 74; a member of the Medical Society of Virginia; died, February 25, from cerebral hemorrhage.

Thomas H. Wilson, Dennison, Ohio; Starling Medical College, Columbus, Ohio, 1869; aged 75; a member of the city council of Pittsburgh in 1896-1897; died, March 22.

Talbot Reed, Atlantic City, N. J.; University of Pennsylvania, Philadelphia, 1894; for two terms health officer of Atlantic City; died, March 19, from nephritis.

William Benjamin Harrison, Columbia, Tenn.; University of Louisville, Ky., 1856; aged 89; a member of the Tennessee State Medical Association; died February 5.

John R. Reeve, DeLand, Fla.; formerly of Superior, Wis.; University of Toronto, Ont., 1857; a member of the Florida Medical Association; died about March 22.

Brooks DeForest Norwood, Westport, Conn.; New York Homeopathic Medical College and Flower Hospital, New York City, 1912; aged 42; died, March 20.

John H. Young, New Cumberland, Pa.; Homeopathic Hospital College, Cleveland, 1874; aged 83; a veteran of the Civil War; also a clergyman; died March 23.

Abraham H. Faith ✠ Denver; Medical College of Indiana, Indianapolis, 1886; St. Louis College of Physicians and Surgeons, 1892; aged 61; died February 21.

Louis Francis Keever ✠ Parkersburg, W. Va.; St. Louis College of Physicians and Surgeons, 1913; aged 61; died, February 16, from pernicious anemia.

Parke Custis Sickler ✠ Wilkes-Barre, Pa.; Baltimore Medical College, 1900; aged 47; died in the Philadelphia Hospital, March 6, from angina pectoris.

W. E. Swinney, McRae, Ga.; Medical College of Georgia, Augusta, 1869; aged 73; for several years city clerk of McRae; died, March 10, from nephritis.

James H. Giles, Big Sandy, Tenn.; University of Tennessee, Nashville, 1892; aged 55; died, March 18, from double pneumonia following influenza.

Alexander R. McDonald, Boyd, Wis.; McGill University, Montreal, 1882; aged 68; died in Minneapolis, March 13, from arteriosclerosis.

Alvin Marion Lakin ✠ Yale, Ia.; Rush Medical College, 1884; aged 62; died in the Methodist Hospital, Des Moines, Ia., January 19.

William L. Bullis, Allerton, Ia.; Philadelphia University of Medicine and Surgery, 1870; aged 74; died, recently, from heart disease.

Charles E. Blacker, Indianapolis; Medical College of Ohio, Cincinnati, 1880; aged 78; died, March 23, from heart disease.

Charles S. Briggs, Nashville, Tenn.; University of Nashville, 1875; died in the Briggs Infirmary, Nashville, March 23.

William Vernon Van Norman, Los Angeles; Cleveland Homeopathic Medical College, 1898; aged 44; died March 28.

George Washington Wilson, Vaiden, Miss.; Medical College of Alabama, Mobile, 1894; aged 60; died March 23.

Samuel F. Nash ✠ Bessemer, Ala.; Birmingham, Ala., Medical College, 1908; aged 42; died in February.

Andrew Lincoln Belt ✠ Fort Dodge, Ia.; State University of Iowa, Iowa City, 1890; aged 58; died March 7.

Frank Fletcher Carr, Holden, Mass.; Harvard University Medical School, 1893; aged 50; died March 6.

Clarence Fletcher Swift, Harlan, Ind.; University of Michigan, Ann Arbor, 1877; died about March 10.

Edgar Leonard Walker, Moriah, N. Y.; University of Vermont, Burlington, 1883; died March 23.

D. W. Faulkner, Foxboro, Ont.; McGill University, Montreal, 1878; aged 67; died March 4.

Marriages

HOWARD DAVIS LEWIS, Baltimore, to Mrs. Flora M. Gottschall of Sunbury, Pa., March 25.

ALICE MITCHELL DE FOREST to Mr. John Wilfred Drummond, both of Detroit, April 2.

SAMUEL J. MCNEILL, Chicago, to Miss Edna E. Hamilton of Toronto, Ont., March 31.

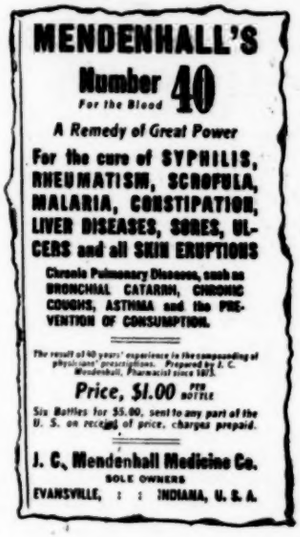
ROY LEE SMITH to Miss Hazel Elizabeth Miles, both of Indianapolis, April 6.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

SOME MISBRANDED NOSTRUMS

Mendenhall's No. 40 for the Blood.—The J. C. Mendenhall Medicine Co. of Evansville, Ind., shipped in March, 1917, some of its nostrum "Mendenhall's No. 40 for the Blood" which was misbranded. Analyzed by the Bureau of Chemistry, the stuff was reported to consist essentially of potassium iodid, cathartic resins, ammonium acetate, licorice, glycerin, sugar, alcohol and water. It was falsely and fraudulently sold as a cure for syphilis, aneurysm of the aorta, gonorrhea, eczema, rheumatism, catarrh, malaria, and diseases of the liver, kidneys and spleen. In November, 1918, the company pleaded guilty and was fined $100 and costs.—[*Notice of Judgment No. 6637; issued March 22, 1920.*]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Number 40
For the Blood
A Remedy of Great Power
For the cure of SYPHILIS, RHEUMATISM, SCROFULA, MALARIA, CONSTIPATION, LIVER DISEASES, SORES, ULCERS and all SKIN ERUPTIONS
Chronic Pulmonary Diseases, such as BRONCHIAL CATARRH, CHRONIC COUGHS, ASTHMA and the PREVENTION OF CONSUMPTION.
The result of 40 years' experience in the compounding of physicians' prescriptions. Prepared by J. C. Mendenhall, Pharmacist since 1871.
Price, $1.00 PER BOTTLE
Six Bottles for $5.00, sent to any part of the U. S. on receipt of price, charges prepaid.
J. C. Mendenhall Medicine Co.
SOLE OWNERS
EVANSVILLE, : : INDIANA, U. S. A.

Zaegel's Essence and Lung Balsam.—Max R. Zaegel, Sheboygan, Wis., who traded as M. R. Zaegel & Co., shipped in April, 1917, quantities of "Zaegel's Essence" and "Zaegel's Lung Balsam." The government chemists analyzed the "Essence" and reported that it consisted essentially of alcohol, water, sugar and plant extractives, including a laxative substance and a saponin. The "Lung Balsam" was also analyzed and reported to consist essentially of alcohol, water, sugar and laxative plant material flavored with oil of peppermint. The "Essence" was falsely and fraudulently represented as a cure for rheumatism, stomach, liver, bowel and kidney complaints, headaches, diseases of women and nervousness, as well as a remedy for heart trouble and a preventive of appendicitis. The "Lung Balsam" was falsely and fraudulently represented as a cure for coughs, lung and throat troubles and whooping cough and effective, when used in connection with "Z. M. O.," as a cure for pneumonia and when used with the "Essence" as a cure for consumption. In September, 1918, Zaegel pleaded guilty and was fined $110. —[*Notice of Judgment No. 6628; issued March 22, 1920.*]

McGraw's Liquid Herbs of Youth.—George W. McGraw, who traded as the McGraw Remedy Co., Little Rock, Ark., shipped in December, 1916, a quantity of "McGraw's Liquid Herbs of Youth." The Bureau of Chemistry reported that this marvel was, essentially, Epsom salt, senna, red pepper, quassia, alcohol and water with wintergreen flavor.

McGraw's Liquid Herbs of Youth was represented as a cure for rheumatism, scald head, pimples, syphilis, ringworm, headache, pains in the back, catarrh, female weakness and some other conditions and it was claimed to invigorate the nervous system and impart new life and energy to all functions of the body at the same time that it was eradicating disease. These claims were declared false and fraudulent. McGraw pleaded guilty in September, 1918, and was fined $10.—[*Notice of Judgment No. 6673; issued March 29, 1920.*]

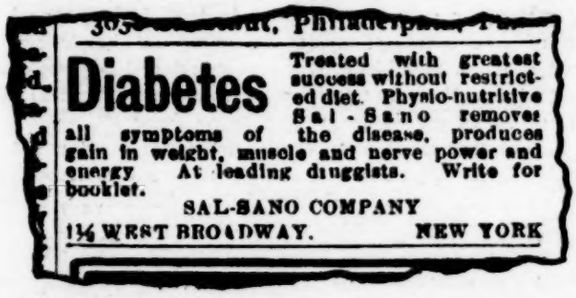
Jarabe de Ambrozoin.—The American Apothecaries Co., Astoria, N. Y., shipped during March, 1917, a quantity of "Jarabe de Ambrozoin." The Bureau of Chemistry reported that analysis showed this product to be composed essentially of terpin hydrate, menthol, benzoic acid, ammonium chlorid, sodium bromid, glycerin, alcohol, sugar and water. It was falsely and fraudulently represented as a treatment for laryngitis, asthma, whooping cough and tuberculosis. In February, 1919, the company pleaded guilty and was fined $100.—[*Notice of Judgment No. 6642; issued March 22, 1920.*]

Kampfmueller's Rheumatic Remedy.—The Kampfmueller Rheumatic Remedy Co., Louisville, Ky., shipped in December, 1916, a quantity of "Kampfmueller's Rheumatic Remedy." The Bureau of Chemistry reported that this consisted essentially of potassium iodid, plant extractives, alcohol and water. It was falsely and fraudulently represented as a cure for arthritic rheumatism, articular rheumatism, inflammatory rheumatism, muscular rheumatism and rheumatic fever. In October, 1918, the company pleaded guilty and was fined $25.—[*Noticed of Judgment No. 6684; issued March 29, 1920.*]

Sal-Sano.—Ernst Bischoff, New York City, who traded as the Sal-Sano Co., shipped in July, 1917, a quantity of Sal-Sano, which was misbranded. The Bureau of Chemistry reported that analysis showed this stuff to contain essentially:

Sodium chlorid (common salt)	19.9 per cent.
Sodium phosphate	13.6 per cent.
Sodium bicarbonate (baking soda)	42.2 per cent.
Sodium sulphate (Glauber's salt)	20 per cent.

This mixture was falsely and fraudulently represented as a cure for diabetes "when in truth and in fact it was not."


Diabetes
Treated with greatest success without restricted diet. Physio-nutritive Sal-Sano removes all symptoms of the disease, produces gain in weight, muscle and nerve power and energy. At leading druggists. Write for booklet.
SAL-SANO COMPANY
1½ WEST BROADWAY. NEW YORK

In December, 1918, Bischoff pleaded guilty and was fined $100.—[*Notice of Judgment No. 6658; issued March 29, 1920.*]

Indian Wyanoke.—Albert M. Follett, who did business as Park & Russell Co., Concord, N. H., shipped a quantity of Indian Wyanoke in May, 1917, which was misbranded. Analysis by the Bureau of Chemistry showed the product to consist essentially of chloroform, ammonia, menthol, glycerin, turpentine-like oils, alcohol and water. The stuff was falsely and fraudulently represented as a remedy for diphtheria, consumption, pleurisy, pneumonia, deafness, sore eyes, rheumatism, "creeping paralysis," felons, peritonitis, appendicitis, baldness, dandruff and many other things. In April, 1919, Follett pleaded guilty and was fined $25 and costs.—[*Notice of Judgment No. 6664; issued March 29, 1920.*]

Gregory's Antiseptic Oil.—"Gregory's Antiseptic Oil" was a nostrum shipped by the C. J. Lincoln Co., Little Rock, Ark., in August, 1917. The Bureau of Chemistry reported that analysis showed the preparation to consist approximately of 89 per cent. kerosene oil with small amounts of oil of cloves, cassia and sassafras with a trace of camphor and pepper resins. The preparation was falsely and fraudulently represented as a cure for rheumatism, hog cholera, pneumonia, big-jaw, lung troubles, sweeny, asthma, bighead, coughs, blind staggers, pleurisy, blackleg, backache, sore throat, kidney troubles, consumption and one or two other things. The C. J. Lincoln Co. pleaded guilty in April, 1919, and was fined $50.—[*Notice of Judgment No. 6670; issued March 29, 1920.*]

Correspondence

A STATEMENT CONCERNING THE RADIUM SITUATION

To the Editor:—Late in the year 1912 the Bureau of Mines undertook an investigation of the radium-bearing ores situated in Colorado and Utah. This investigation resulted in the publication in 1913 of a bulletin of the Bureau of Mines entitled "A Preliminary Report on Uranium, Radium and Vanadium," by Richard B. Moore and Karl L. Kithil. Up to the time this bulletin was published, the larger proportion of the ore mined had been shipped abroad, mainly to England, France and Germany, where the uranium, vanadium and radium were extracted. One company, however, in this country was greatly interested in the extraction of radium from carnotite, and at the time of publication of this bulletin had made a good start toward the desired end.

Very few people, however, in the United States knew anything concerning these deposits, and a still fewer number had any definite idea that they might be used as a commercial source of radium. Even a large proportion of the miners had only a hazy idea concerning the fact that the ore contained radium, as the European buyers emphasized that they were purchasing the ore for the vanadium which it contained.

In 1912 no one had a real conception of the value of these deposits to the United States and to the world in general. Whereas a limited number of people knew that they contained radium and a certain number in this country were interested in the possible extraction of radium from these ores, the fact that they constituted the largest deposit of radium-bearing ore in the world was not known until the publication of Bulletin 70 of the Bureau of Mines, referred to above. On page 42 of this bulletin there appears:

> The United States possesses unique deposits in these carnotite ores. They constitute at present the largest known supply of radium-bearing minerals in the world. With the exception of the ore mined and utilized by two firms, practically every pound is shipped abroad. Up to the present very little interest has been shown by Americans in these deposits, which may not be duplicated, so far as quantity goes, in any part of the world.
>
> The only other large deposits of uranium-bearing ores are those in Austria. They are considered of such importance that the Austrian government has taken entire charge of them. The output from the carnotite fields of this country is much larger than that from the Austrian mines and is likely to continue larger for some time to come, but the ore should be mined with minimum waste and the industry should yield a maximum profit to this country.

Since 1913 the situation as regards the extraction and recovery of radium has changed, and at the present time this country produces much more radium than all the rest of the world put together.

On account of the fact that these are the largest radium deposits in the world, there has been a tendency to overestimate the amount of ore available and the probable length of time the deposits will be the source of commercial radium. There is naturally, under such circumstances, a difference of opinion as to the probable amount of ore that can be produced. No one can tell exactly just how much radium ore can be derived from these fields. To some extent the future production will depend on the price, as a much higher price would allow lower grade ore to be mined and treated. As the ore always exists in pockets of varied sizes and grades, the mining has been largely confined to outcrops, which has made the question of an estimation of the probable amount of ore available easier than if mining conditions were such as are encountered in connection with other metals. The larger proportion of these outcrops have now been worked out, and the more important companies have been and are drilling and mining small bodies of ore which have been located below the surface. It follows that as mining becomes more expensive and the grade of ore treated becomes lower, the price of radium must necessarily increase, unless very much more efficient methods of treatment are discovered than are used at the prseent time, and this is not likely.

Based on the present production and anything like the present price of radium, it is probable that the carnotite deposits of Colorado and Utah will not last as a commercial source of ore for longer than six to ten years. It is difficult to estimate the total amount of radium that has been produced in the world, but it is probably somewhere between 100 and 110 gm. of radium element. Of this amount about 70 gm. of radium have been produced in this country, and an appreciable quantity of the other 30 to 40 gm. extracted abroad have come from exported American ores. It can be readily seen, therefore, that nearly three quarters of the total world's production of radium has come from American carnotite ores.

Whereas more than 100 gm. of radium have actually been produced, there is not by any means 100 gm. available today. A considerable amount of both American and European radium has gone into the production of luminous paint for watches, clocks, electric light push buttons, etc. The amount of radium used for these purposes, however, is small in proportion to the war uses both here and abroad. The dials on the instruments used on practically all aeroplanes were marked with radium luminous paint. Radium was also used in the war for gunsights and various other purposes, and nearly the whole production of 1919 as well as a large proportion of the production of 1918 was used for war purposes in which the radium was permanently lost. Not only is this true, but as Germany, France and England were rather short on radium, especially the first nation, a considerable amount of radium abroad which previously had been used for cancer treatment was drawn on for war purposes. Even in this country a number of physicians sold their supplies. Owing to the varied uses for war purposes it is impossible to state just how much radium is left at present; but the amount is very considerably less than the 100 to 110 gm. actually produced.

Owing to these facts, to the limited life of the radium ore deposits, and to the successful use of radium in cancer work and for other therapeutic purposes, it is important that the physicians of this country should consider the matter very carefully and take such steps as are necessary to provide radium for the needs of cancer patients before the material is gone or has been used for other purposes.

In order that the radium plants may run and the extraction of radium may be possible, it is necessary to have a market for the product; and if there is not a sufficient demand for medical purposes, no one can blame the manufacturers for finding other uses. It therefore becomes necessary to find ways and means for purchasing the radium from the manufacturers while it is possible to do so.

This is partly being taken care of by private purchases for hospitals. It is difficult to estimate exactly how much radium is in use in this country at present for such purposes; but it is probably between 20 and 25 gm. Not only can the present and future situation be ameliorated by encouraging further purchases by individuals and hospitals, but great good might be accomplished by obtaining either from the government or from private sources funds to purchase a large amount of radium during the next five years which could be placed in the hands of some proper organization to be administered for the benefit of the people of the United States.

Richard B. Moore, Washington, D. C.
Chief Chemist, U. S. Bureau of Mines.

"THE CAUSE OF ABSCESS OF THE LUNG AFTER TONSILLECTOMY"

To the Editor:—In The Journal, April 3, 1920, p. 941, Dr. Clendening states his suspicion that motor-driven ether apparatus may be a frequent cause of lung abscess after tonsillectomy. He goes farther and states that the use of these machines should be discontinued until their innocence is proved.

My work is that of an expert anesthetist, and in the course of a month I probably work with a dozen different operators for tonsillectomy, thus becoming familiar with many and varied types of technic. From my own experience it would seem to me altogether too radical to condemn the use of an apparatus found so valuable by so many men on the sole argument of "post hoc ergo propter hoc."

Dr. Clendening does not mention whether the position used during operation in his cases was the dorsal one or not, nor does he say whether those patients having lung abscess following tonsillectomy were returned to bed in the dorsal position and kept so during recovery of their reflexes; but I would presume that the dorsal position was used.

Now, if ether blower and suction apparatus is responsible for the complication of lung abscess after these operations, is it not more reasonable to say that the suction portion of the apparatus is responsible in that it has made thorough tonsillectomy possible in the dorsal position and has so delayed men in changing to some position in which the throat draining is by gravity forward into the mouth, such as the lateral position of the patient's body with mouth turned down or capable of being turned down when necessary? Is there any excuse for carrying a patient back to bed, flat on his back after a tonsillectomy, to "gargle" and inhale septic throat contents and blood, when he could just as easily be transported in the prone position with the head turned to one side and so let gravity keep the airways free?

I believe that these motor-driven machines are found too valuable by a large number of operators to condemn them until we have completely eliminated the old hazardous dorsal position during operation, and especially every second of the time after operation until the patient is conscious and the reflexes are intact.

Ralph M. Waters, M.D.,
Sioux City, Iowa.

Use of "Patent Medicines" in Tuberculosis.—The extreme danger of depending in the least on "patent medicines" for the cure of tuberculosis is emphasized by the thousands of persons every year who have trusted to their false promises until so much time has been lost that their cases have become hopeless.—*Bull. Maine State Dept. of Health*, October, 1919.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 11-12. Sec. Regular Bd., Dr. I. J. Stout, Brinkley. Sec. Eclectic Bd., Dr. C. E. Laws, Fort Smith.

HAWAII: Honolulu, May 10-14. Sec., Dr. R. W. Benz, 1141 Alakea St., Honolulu.

ILLINOIS: Chicago, June 14-17. Director, Mr. Francis W. Shepardson, Springfield.

LOUISIANA: New Orleans, May 4. Sec., Homeo. Bd., Dr. F. H. Hardenstein, 702 Machesa Bldg., New Orleans.

NATIONAL BOARD OF MEDICAL EXAMINERS: Philadelphia, May 19-26. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEVADA: Carson City, May 3. Sec., Dr. Simeon L. Lee, Carson City.

NEW YORK: New York, Albany, Syracuse, Buffalo, May 18-21. Assistant, professional examinations, Mr. Herbert J. Hamilton, Education Bldg., Albany.

AN INVESTIGATION OF CONDITIONS IN THE DEPARTMENTS OF THE PRECLINICAL SCIENCES

Report of a Committee of the Division of Medical Sciences of the National Research Council

JOSEPH ERLANGER, M.D., ST. LOUIS; C. M. JACKSON, M.D., MINNEAPOLIS; GRAHAM LUSK, NEW YORK; W. S. THAYER, M.D., BALTIMORE, AND V. C. VAUGHAN, M.D., ANN ARBOR, MICH.

RESOLUTIONS ADOPTED UNANIMOUSLY BY THE DIVISION OF MEDICAL SCIENCES

WHEREAS, A committee composed of Drs. Joseph Erlanger, C. M. Jackson, Graham Lusk, W. S. Thayer and V. C. Vaughan appointed by the Division of Medical Sciences of the National Research Council to study the situation in regard to the supply of assistants in preclinical departments has made a thorough study of this in the medical schools of the country and submitted a report setting forth existing conditions and analyzing suggestions as to improvement; and

WHEREAS, This study shows that there is a serious scarcity of men of proper caliber for assistants in preclinical sciences seeking such positions; be it

Resolved, By the Division of Medical Sciences of the National Research Council:

1. That this deficiency in assistants constitutes a very serious menace to medical education because not alone are there insufficient assistants for the present needs of instruction in the preclinical sciences, but the deficiency of the present inevitably must result in an inadequate number of men qualified for higher positions in the preclinical sciences, and a consequent deterioration in these departments in a very few years.

2. That since the clinical departments are in many ways dependent for their efficiency on the instruction afforded and the investigation conducted in the preclinical sciences, deterioration in the preclinical sciences will result in deterioration in the clinical departments.

3. That since these conditions enumerated under 1 and 2 exist, it is very essential that steps be taken to provide for a more satisfactory supply of assistants in the preclinical sciences.

4. That since directly or indirectly the remedy for these conditions depends to a large degree on increased budgets for salaries for assistants, instructors, assistant professors and professors, and for technicians and supplies, it is highly important that funds be secured for these purposes to prevent deterioration in the entire structure of medical education.

5. That, since this need for funds for the preclinical sciences seems so pressing, the larger proportion of funds available for developing medical education should be applied to the preclinical rather than to the clinical departments of the medical schools for the present and until such time as a more satisfactory situation is obtained in the preclinical sciences.

REPORT OF THE COMMITTEE

To the Division of Medical Sciences of the National Research Council:

Gentlemen:—Your committee appointed to consider the present paucity of satisfactory assistants in the departments of the preclinical sciences (anatomy, bacteriology, pathology, biochemistry, pharmacology, physiology, etc.) and its probable effect on investigation in the medical sciences and to advise the National Research Council through the Division of Medical Sciences of any plan that should be undertaken to correct this deficiency, beg leave to report as follows:

The data on which this report is based were gathered by means of a questionary addressed to the heads of the departments of the preclinical sciences in all Class A medical schools. When the information available was insufficient to permit of addressing it to the head of the department by name, the questionary was addressed to the department. Some of the letters must, therefore, have been addressed to nonexistent departments. And, inasmuch as two or even three subjects often are combined into one department, it must frequently have happened that one and the same individual received two or more copies of the questionary. It therefore is impossible to determine accurately the number of departments that have failed to reply. Two hundred and ninety-eight copies were distributed. We can be sure only that we have failed to hear from something over fourteen departments. The replies received up to the time this report was prepared (February 20) numbered 139. Copies of all, including thirty-one received since, accompany the report. An adequate conception of the problem can be obtained alone by reading the whole set.

Owing to the number and, in many instances, the length of the replies, it is impossible to publish all of them. This is to be regretted not alone because of their value as an exposition of the situation in medical education, but also because alone by publication in full is it possible to avoid running the risk of inadequately presenting the problem. An alternative, and the one we have been forced to adopt, is to publish a limited number of the replies. In order to avoid as far as possible the danger of making a selection on the basis of personal inclination, the arbitrary decision was made to select one reply from each of the twenty-six schools that had returned three or more answered questionaries up to the time of preparing this report. The medical schools that fall into this category are: Leland Stanford Junior University; University of California; Yale University; Emory University; Northwestern University; Rush; University of Illinois; University of Iowa; Johns Hopkins University; Harvard University; University of Michigan; University of Minnesota; St. Louis University; University of Missouri; Washington University; University of Nebraska; Columbia University; Cornell University; University and Bellevue Hospital; University of Cincinnati; Western Reserve University; University of Pennsylvania; University of Pittsburgh; University of Texas; University of Virginia, and University of Wisconsin.

The considerations determining the selection of the reply from a given school have been, first, brevity, and second, representativeness. Occasionally a longer reply has been selected because of its more thoughtful treatment of the subject. In the case of two of the schools, a second reply (Nos. 27 and 28) has been transcribed because of their unusual point of view. The replies have been edited only to the extent of obscuring the identity of the writers and of eliminating irrelevant matter. The distribution of the selected replies among the several preclinical subjects happens to be as follows: anatomy, 6; biologic chemistry, 3; biologic chemistry and physiology, 1; pathology, 6; pathologic chemistry, 1; pharmacology, 2; physiology, 5; physiology and pharmacology, 1, and experimental medicine, 1.

QUESTIONS SUBMITTED

The questions the heads of the departments were requested to answer were as follows:

1. Is your department experiencing any difficulty in filling vacancies and in holding men? If so, to what cause or causes do you attribute the difficulty?

2. Do you succeed in obtaining as assistants the best qualified men from among those eligible? If not, what becomes of such men?

3. Can you suggest a plan or plans that might lead the best qualified men to take up your subject as a career?

4. Can you suggest a plan or plans for increasing the number of men from whom might be selected assistants for the preclinical departments?

In the replies published herewith, the marginal numbers indicate the number of the question that is being answered.

REPLIES [1]

1

1. Yes. I am in receipt of innumerable requests for men to fill both academic positions and hospital laboratory positions and have no one in sight for 90 per cent. of the requests. So far I have been unable to hold any of the men that I have trained. I am able to keep them until they are well trained and then they receive offers that they should not refuse. The cause is entirely financial. It is, perhaps, especially marked in pathology as compared to other fundamental branches, because a pathologist must have a clinical training and therefore is able to accept the much more attractive opportunities offered in clinical medicine than in pathology; also hospital laboratories are increasing in importance and many of them are offering much larger salaries than men of similar experience can possibly secure in universities. Furthermore, these hospital laboratory positions in many instances offer good facilities for research work.

2. Yes. We obtain usually some of the best, eligible men as assistants because medical students recognize that advanced training in pathology is the best stepping stone to further advance in clinical medicine, just as in former years anatomy was the high road for the ambitious surgeon.

3. In my judgment there is just one solution of the problem and that is that the rewards at the top of the ladder be adequate to compensate the beginner for his period of sacrifice to attain that goal. Young men are perfectly willing to sacrifice financial advantage for some time in medicine and law as well as other professions, because at the end is a goal that is worth the sacrifice. Formerly the advantages of academic life were sufficient to induce some of the best men, and especially those with the higher ideals of work and service, to forsake the road of financial success in clinical medicine to secure the advantages that the universities had to offer. Now that the professors in clinical branches are being given all the academic privileges with much higher possibilities of remuneration, this same type of men, from whom the faculty of pathology must be recruited, naturally forsakes pathology for the clinical branches. . . . Unless a radical change is made very quickly, in a very few years there will be no competent men in pathology. There will merely be a few men who have been in pathology too long to change and young men who are taking pathology with the expectation of shifting at the earliest possible moment to one of the clinical branches. The clinical branches in the past have recruited their teachers and research men almost entirely from the laboratories in the fundamental sciences. The recent exaltation of clinical branches is merely another case of slaughtering the goose that lays the golden egg. It will be perhaps easier to put the departments of pathology on the same footing as the clinical branches than the other fundamental branches, since the pathological laboratories play such an increasingly important part in the conduct of the clinical work. To recruit the pathological faculties it is necessary to place the department of pathology on the same footing in every respect as the department of internal medicine. When the opportunities in pathology and internal medicine are equal then equally good men will be available in each subject.

4. I believe that the answer to 3 covers Question 4. When physiology and pathology offer careers corresponding to those of the clinical branches, they will have plenty of assistants, but until then, their assistants will be not only deficient in number but especially inferior in quality.

8

1. In the past this department has had difficulties in filling vacancies. The assistants in the department have almost invariably been candidates for the Ph.D. degree, i. e., they have been men of little experience in research, in teaching, and in general knowledge of physiology. Until this year we have had few men as assistants who have had the medical degree. The department here has also had difficulty in holding men. . . . The difficulty in filling vacancies and in holding men is in my opinion twofold. One is a financial difficulty, the other is more complex and will be considered in Section 3. First, with reference to the financial condition; the highest pay which we have been able to offer to assistants has been $500 a year. . . . Furthermore, the higher places, such as instructorships, assistant professorships and the professorship, are inadequately compensated. In my opinion an instructor should not receive less than $2,400 annually, and an assistant professor should receive $3,600 or $4,000.

Top salaries for professors in the preclinical subjects throughout the country are commonly regarded as appropriately lower than that given to full-time clinical men by half or at least by several thousand dollars. I have not seen any good reason for this arrangement except that which is based on the capability of the clinician to go outside, and by devoting his time to practice, to gain larger returns. This is a possibility which the laboratory man likewise had at one time. He should not be penalized because he has surrendered it in devotion to the advancement of medical knowledge. It seems to me that the object of having full-time clinical men, as it is in having full-time laboratory men, lies in the provision for research. If both types of investigators are conducting medical research, there is no reason either in the character of the research or in its results, which justifies the distinction that has been drawn. This distinction is likely to breed a feeling of injustice in medical faculties and possibly a restlessness due to unfair discrimination. If such an attitude does arise, it seems to me that there will be a tendency for the best men to seek clinical rather than laboratory chairs.

If there is anxiety lest the laboratory departments will not be manned by the best men, the danger of such a result should be provided against now.

2. With reference to securing the best qualified men, it may be stated at once that it is rare for such men to enter service here in the laboratory departments. They go into clinical work. This tendency has been especially marked since clinical research has become prominent. It is possible now for a person having an interest in physiology, for example, to obtain work in a first class hospital in which he can satisfy his physiological interest, use physiological methods, conduct physiological research, keep in touch with patients, have room, board and laundry supplied, and frequently a satisfactory salary in addition. The meager opportunities offered in the laboratories of the medical school as compared with those in the laboratories of a very good hospital are distinctly unfavorable to men pursuing careers in laboratory subjects.

3. With regard to plans for leading the best qualified men to take up preclinical subjects as a career I wish to suggest several considerations:

(*a*) Adequate financial return for beginners, as well as for persons who have gained experience, must be provided as indicated above.

(*b*) We are in a vicious circle by not being properly manned. If a department has a professor, an assistant professor and several instructors who are all well-trained, active investigators, they by contact with the students, are able to interest them in investigation and thus increase their chances of becoming permanently attached to investigation as a pursuit. Just because we have an inadequate or ill-qualified personnel we continue to have such a personnel.

(*c*) The most important means of interesting alert, keen-minded students in medical research is by contact with investigation. I believe that inquiry among our leading investigators would show that it was some chance oppor-

1. On account of lack of space, only seven of the twenty-eight replies selected for publication appear in this article, one from each of seven of the better supported schools. Each represents a different preclinical subject. The complete paper containing the twenty-eight representative replies will be reprinted as a pamphlet and will be sent on receipt of stamped, directed envelop.

tunity of learning what research really is that led them to undertake it permanently. The rigidity of the medical curriculum and its complete filling of all available time result in a definite crowding out to the possibility of men undertaking special work in any of the preclinical subjects, unless they have had some previous experience and can therefore be released from the ordinary routine. . . .

4. I believe that the plan suggested under 3 will serve to increase the number of men from whom assistants might be selected for work in preclinical departments. . . .

Besides considerations which are directed in the main towards inducing *medical* students to go permanently into preclinical branches, there should be considered the probability that we shall have to depend to a considerable extent on possessors of the Ph.D. degree for adequately trained candidates for research positions. . . . I believe that any preclinical department would do well to get into relation with the academic department of the university and count upon receiving a certain number of candidates for the Ph.D. degree as assistants. I believe that it would be a mistake in the development of medicine to have the whole department thus manned.

12

1. No more than should be expected. The chief factor is "clinical opportunities": at least what the prospective assistant believes to be clinical opportunities.

2. Yes.

3. Clinical subjects, of course, are more attractive to the vast number of men. But that this is true in the case of the very best men, I am not so sure. I would suggest that clinical subjects are in need of men of high ideals and that it is better that they be allowed to go in that direction.

4. This has always been an economic question. The salaries paid to clinical assistants are so great by comparison as to exclude all competition.

16

1. Yes. Lack of either immediate or future remuneration, commensurate with remuneration in other lines.

2. No. They go into the clinical branches.

3. Much larger salaries for present and future.

4. Much larger salaries.

19

1. None . . . since we have a fairly large department. One professor, three assistant professors, three instructors, and three assistants. The small, two and three men anatomical departments have great trouble in getting and holding their men; only the professor can survive the burden of routine work. Young men also seem more inclined to work in departments where there are several more advanced men working. We need more fully developed laboratory departments in the medical schools before we can hope to attract capable men, as they must see work being done.

2. We have trouble getting the best medical students to come in the laboratory as assistants. They go into medical practice which was their initial aim on entering the medical college. To pull a medical student into the laboratory he must be diverted from his first idea which, in 98 per cent. of the cases, was practice. Naturally the best qualified men are the most difficult to divert.

3. Increase the size of anatomy departments up to a university basis with not one but four or five professors in the department with a number of assistants and instructors and sufficient janitor service. This is the one thing that makes university departments of chemistry, etc., full of students, college graduates, willing to work four or five years to become a professional chemist with a small salary in the future. A better rate of pay will help the situation but not cure it. Fellowships and low paid assistantships are of little avail.

4. By preventing the proposed fifth clinical intern year of the medical course from becoming in all cases simply a clinical intern year, instead of largely a laboratory course in the case of many. The full-time clinical instructorship will appeal to even the few that might have come into laboratories, since they have all the advantages, etc., and in case of failure one can step right into practice. Whereas if a man fails after four or five years in the preclinical department he is almost unfitted for practice. It looks as if the medical schools must still for a long time recruit their laboratory teachers from the university science departments, and this is too bad, as American medical schools should be self-supporting in their teaching supply. . . .

21

1. Yes. Mainly lack of funds.

2. Not always. They go into clinical work, not infrequently into clinical laboratory work for a period of some years. They are aware that the time spent in this form of laboratory work is likely to bring material rewards in the future.

3 and 4. Behind any plan which promises success must stand a very large increase in funds available for increasing salaries and facilities for work. A small increase is of little avail. While no doubt other factors are important, nearly all can be traced back to the economic factor. An increase of 100 per cent. in salaries, so that $10,000 or $12,000 posts would be as common as $5,000 or $6,000 just now, would in time have a great effect. The common idea that the so-called full-time clinical man should receive twice as much as the full-time laboratory man is quite erroneous. Both should be well paid. If there is any discrimination it ought to be in favor of the laboratory man, as in the past at any rate he has had on the average the higher quality of brains. This has a definite bearing on the question why it is becoming so hard to get or to hold the best type of man in the laboratory branches. . . .

22

1. Insufficient means to provide living expenses for a group of untrained men. Insufficient means to maintain a line of promotion offering increasing income as men grow older and acquire increasing responsibilities. A widespread conviction that the highest places attainable do not provide a comfortable living.

2. No. A considerable proportion of the men in this department who have been desirable to hold have been attracted to clinical departments in universities or have taken up practice of medicine.

3. There should be a number of junior appointments (six to ten) paying the equivalent of $1,000 to $1,200 (in some instances with residence in the hospital). Several positions, at least four, ranging from $2,000 to $5,000. Salaries to heads of departments in fundamental sciences having closer approximation than exists at present to those attainable with reasonable success in other walks of life and particularly in clinical medicine. With existing conditions this requirement must be fulfilled in order to elevate the status of teaching in the community.

4. Recognition by the clinical departments that the training of men to fill the highest places in medicine or surgery requires a more intimate knowledge of pathology. A large proportion of those who are pursuing academic careers in clinical medicine should have one or two years as assistants in pathology. Provision for much more numerous junior places to train men both for clinical work and for a career in pathology.

ANALYSIS OF REPLIES

The replies often are couched in indefinite terms so that we cannot be certain that in every case we have correctly grasped the author's meaning. It would seem that at least three of the departments replying do not have assistants of any kind; that two, possibly more, have only student assistants; and that eight, namely, Hooper Institute at California; physiology at Stanford; anatomy at St. Louis University; pathology at Nebraska; physiology at Albany; physiology at Columbia University; physiology at Syracuse, and pharmacology at Western Reserve recently have not had vacancies in the full-time staff. It may be added that it is not always correct to infer that because a department has not been in

the market for assistants the conditions within the department therefore are satisfactory.

However this may be, there remain 125 departments which have recently been in quest of full-time assistants. Of these, fourteen, namely, anatomy and biochemistry at California; biochemistry and pathology at Stanford; pathology at Yale; anatomy, biochemistry, physiology and the School of Hygiene at Hopkins;[2] anatomy at Cornell; biochemistry and physiology at Jefferson; anatomy at Colorado, and physiology at Bowdoin, state more or less definitely that they have had no difficulty or no more than the usual difficulty in filling their vacancies. In many of these instances unusual circumstances are referred to, such as climate, funds or university relations, which, in the opinion of those interrogated, tend to compensate for recognized difficulties. One hundred and nine state definitely that they are unable to fill, or are having difficulty in filling vacancies, or are unable to hold men.

The second question, namely, "Do you succeed in obtaining as assistants the best qualified men from among those eligible?" was framed for the purpose of ascertaining whether students from preclinical departments, who seemed best able to develop the preclinical sciences, were entering and remaining in the departments of the preclinical sciences. The replies to this question show that of the departments that are manned by full-time assistants and within recent years have been in the field for men (126 in number) all believe either that they do not, or do not in general get as assistants the best qualified men, or that when they do get such men they cannot as a rule hold them longer than from one to three years, or they give a noncommittal answer, excepting one department in each of the following eight schools: Colorado, California (Hooper Institute), Stanford, Bowdoin, Hopkins (?), Michigan, Jefferson and Hopkins School of Hygiene.

According to the answers, the better men on graduation mainly go into practice; some go into commercial and hospital laboratories, while the pick of them go into the full-time clinical departments or research institutes. This also seems to be the fate of the promising men who enter the preclinical departments, usually to leave after one to three years of experience.

In our opinion these statistics leave no reasonable room for doubting that there is a paucity of satisfactory assistants in the departments of the preclinical sciences. The better graduates as a rule do not seek positions in these departments; or, having for one reason or another become members of such a department, they do not as a rule remain very long in it. The effect this deficiency in satisfactory assistants must have both on the quantity and on the quality of research accomplished in the fundamental sciences, not alone by the assistants themselves but also by the older and better trained men who are making or hope to make the preclinical sciences their life work, is so obvious as not to require comment.

The difficulty in filling vacancies and in holding men (Question 1), and the inability to interest the better men in careers in the preclinical sciences (Question 2), both are attributable to the same causes and, to refer now to Question 3, any plan calculated to lead into the preclinical sciences their fair share of the best qualified men must of course take these causes into consideration. The replies show, both by the causes assigned and by the plans proposed, that the situation is quite complex; many, indeed most, refer to more than one factor. The opinion, however, is nearly unanimous that insufficient salaries is one of the causes—that improvement in the salary situation alone is all that is necessary to relieve the immediate situation. It is referred to as a cause of the difficulty, or is mentioned as one of the ways of overcoming the difficulty in all of the replies save two or three. Two of those interrogated (Nos. 27 and 28) are of the opinion that inadequate salaries are not the chief factor.[3] The fault, though, is by no means entirely with the salaries of the assistants; for, even under present conditions, it seems possible in many of the schools to obtain excellent assistants who remain for a year or two in order better to prepare themselves for practice, for commerce, or for a career in one of the clinical departments. Rather, the main deterrent is the prospect that if one actually should achieve success, the final goal would fall far short of furnishing as large a salary as preclinical heads feel they are entitled to receive. To quote an expression frequently found in the replies—the salaries are too low "all along the line."

The answers make it clear that it is no longer true, if it ever was, that a man will choose an academic career when he knows that even if he should achieve distinction he would have to forego the prerogatives and comforts that now can be gained by any one of similar attainments in other walks of life who meets with a fair degree of success. It would seem to be the general opinion that a small increase in salaries would not suffice to check the movement away from pure science.

Two of those interrogated seem to fear that any *great* increase in salaries "would defeat its own end by attracting men by reason of their unfitness." This danger could readily be avoided if, as some suggest, beginners were tried out for two or three years on annual appointments before they actually were made members of a department. All that can be said with regard to this opinion is that the men occupying the preclinical posts that pay the largest salaries certainly are not any less productive than men in other places. We are of the opinion that research would suffer less if the goal were a living in ease and comfort rather than a constant effort to maintain a respectable standard of living.

A fruitful source of discontent apparently is the present movement to pay full-time clinicians larger salaries than the men in the preclinical branches. This subject is specifically mentioned in twenty-eight of the replies, and many others refer to it indirectly. It is pointed out that "a man who studies medicine will naturally be more attracted to the clinical branches where he can now find good opportunities for research and at the same time not cut himself off from the possibility of earning a respectable living;" that "the remuneration of men in the preclinical branches must be raised to that of men doing full-time work in the clinical subjects," "or their assistants will not only be deficient in number but especially inferior in quality." One almost gains the impression that some would actually reverse the situation, so far as salaries are concerned, so as to offset the natural tendency on the part of medically trained men to remain in the clinic and deal with practical things. Further comment on this topic is unnecessary; the replies accompanying the report make the situation quite clear.

But while insufficient pay "all along the line" evidently is the most important factor accounting for the paucity of preclinical assistants, there are other factors that are not without significance. A surprisingy large number are mentioned in the replies. This perhaps is to be expected. For, owing to the state of mind the unsatisfactory conditions in the university world tends to develop, aggravations which ordinarily would not be worth mentioning assume an importance to the individual that compels emphatic assertion. Furthermore, a questionary of this kind affords an opportunity to lay bare difficulties and differences which may be more or less local in their significance. In an effort to ascertain the fundamental difficulties it is essential not to attach

2. The questionary was sent to but one of the departments of the School of Hygiene.

3. These are the two replies that are quoted in addition to the reply that has been selected as representative of opinion in its school.

undue weight to such matters. A few of the factors mentioned as partly responsible for the present situation that seem worthy of more serious consideration are listed below, together with the running comments of the committee.

1. Insufficient staff—junior and senior.
2. Lack of facilities.
3. Difficulty in finding time for research.

If the necessary assistants could be found, these causes of discontent could be remedied by increasing budgets.

4. Supply not equal to demand due to call for men in the industries and in developing schools.

This state of affairs may be temporary, but in any event points to the need of increasing the number of men preparing for a career in science. Possibly, as most believe, the supply could be increased by increasing salaries and budgets, though changes in educational methods may also be necessary.

5. Dearth of men qualified to fill positions.

If true, either training is at fault, or it may be due to failure of men to prepare themselves for a scientific career because they know nothing of it, or, knowing of the career, they regard it unattractive or without opportunities or promise.

6. The men are committed to clinical work from the beginning.

This could be unqualifiedly true only of men who are slated for definite positions in practice. All others, after learning to know something of research, might be swayed to take it up.

7. Attractiveness of clinical work.
8. Majority prefer doing their work in relation with patients.
9. Greater pay and opportunities in full-time clinical departments, together with the possibilities of stepping into practice:
   (*a*) If productive ability should cease.
   (*b*) If promotion is blocked, or
   (*c*) If larger returns are wanted.

Probably true; and if true it would be necessary to increase the attractiveness of the *fundamental* departments if the superstructure is not to topple over; this could be accomplished only apparently by supplying more funds for all purposes, and especially for the purpose of removing any discrepancy in salaries.

10. Possibility of doing as much research while practicing as while teaching.
11. Nonteaching positions offer better opportunities for research.
12. Commercial laboratories not alone offer more pay but the opportunity for research with no teaching.

This is true, at least in part, and such places will always be sought by those who are interested in research but not in teaching. Judging by the emphasis all have laid on investigation there is no doubt but that the vast majority of men who go into science do so because they are interested in research primarily. It must, therefore, be recognized that the best investigators will not go into or remain in university work unless ample time and every facility are provided for research. In addition, there should be university positions to take care of unusually productive men who do not care to teach. This should not be left solely to research and commercial institutions.

13. Falling off in attractiveness of teaching and research as a learned profession.
14. Few interested from the purely scientific side.

We doubt if teaching is any less attractive now than it ever was, present conditions merely serving to emphasize a condition which always has existed in the sciences. The indications are rather that interest in research in pure science by no means has waned; all are pleading for an opportunity to do more, and recommend that research be used as the lodestone by which to attract men into the preclinical sciences as a career.

15. Attitude of the public toward universities.
16. Commiseration.
17. Lack of academic recognition.

It is a mistake to believe, as many apparently do, that the average teacher and investigator is going to exert any influence over any but his immediate colleagues and students. Personal characteristics, but especially financial limitations, are largely the factors at the bottom of these sources of discontent.

18. Unsympathetic attitude of clinicians toward research.

Men holding this attitude toward research in general have no place in our schools.

19. Insecurity of tenure of office.
20. Autocratic university administration and university politics.
21. Treatment of men in departments as subordinates rather than as colleagues.

These are not very often referred to, though a number include in their plans for improving conditions security of tenure after ability has once been demonstrated by a probationary period.

22. Medical curriculum too rigid.
23. State board rule requiring an intern year and not permitting a laboratory year in its stead, limits choice of students.

These are frequently mentioned; they seem to discourage the preclinical heads because they reduce the opportunity for training advanced students, a type of teaching to which none object.

Without going into further detail, the main impression this list leaves is that the majority of men are attracted to the preclinical sciences because they are interested in research primarily. Therefore, to interest men in these subjects and to keep contented those who have already committed themselves to them, it would seem to be necessary not alone to increase salaries but also to give to those who are fitted for investigation the maximum of time and facilities for the conduct of such work, relieving them as far as possible of teaching and of departmental routine. This again becomes a matter of finance.

The opinion frequently is expressed that only rarely will it be possible under the present circumstances to obtain recruits, for some of the preclinical sciences, at least, from among medical students; that in the future it might be necessary or even advisable to depend on philosophical students as a source of supply. Some go so far as to maintain that we shall have to go outside of the medical sciences for men. If the preclinical departments were departments of a university, as they should be and often are, there is no reason why they should not, as they do now, choose assistants from their philosophical students and graduates as well as from their medical students and graduates. But to deprive the heads of the preclinical departments of the opportunity of training investigators, of turning out their own students, would merely have the effect of adding another source of aggravation to the many they are contending with already.

But, to judge by the replies, to substitute graduates in philosophy for graduates in medicine as assistants would merely have the effect of postponing the evil day; for it would seem that, recognizing the power of the M.D. degree, as many of the former, who are now in the preclinical sciences, as find it possible carry work toward that degree and then go into practice. Furthermore, it will be noted that

it is not alone the "medical professors" who are dissatisfied, but the "lay professors" as well.

Finally, attention might be drawn to a suggestion that is frequently found (in at least twenty-two of the replies), in connection with Questions 3 and 4, with regard to means by which men might be led to enter a preclinical science as a career, because it is one which possibly could be put into effect, though, perhaps, it should not be tried until the main difficulty has been met. This suggestion is to put at the disposal of the preclinical departments a number of attractive assistantships and research fellowships so that a man who wished to obtain additional training in one of the fundamental medical sciences, either for the purpose of better preparing himself for practice or for a post in a clinical department, would find no financial obstacle in his way. It is felt that some of the men availing themselves of such appointments might become sufficiently interested to give up their first intentions and become full-time members of a department of a preclinical science. In this way, possibly, depletion of the fundamental departments through transference of men to clinical departments could be avoided.

CONCLUSIONS

The committee is convinced that:

1. There is a great paucity of satisfactory assistants in the preclinical departments.

2. Insufficient immediate and prospective financial support of the preclinical departments as compared with financial support obtainable in other directions is the main, though perhaps not the only, deterrent.

3. This paucity is seriously hampering the development of the preclinical sciences and, through them, of medicine as a whole.

RECOMMENDATIONS

1. In the opinion of the committee, the only effective step the council could take in the matter would be immediately to inform of the actual state of affairs those who alone have it in their power to remedy the situation, namely, the trustees and executives of universities, the medical profession and public-spirited citizens.

2. In the committee's judgment, the most effective and only practicable way of accomplishing this end would be to publish the foregoing analysis of the replies to the questionary, together with a representative reply from each of some twenty to thirty schools, editing the replies only to the extent of obscuring the identity of the writer and of eliminating irrelevant matter.

Occupational Diseases.—In a monograph on the occupational factor in tuberculosis, Dr. G. M Kober states that diseases of occupation are everywhere assuming more and more importance, not only to wage earners and employers, but also to physicians, who, in order to make an early diagnosis and give the patient the full benefit of treatment, should know the conditions injurious to health under which our fellow men and women live and work. In countries and states where reports of certain occupational diseases are compulsory, it is quite possible to secure fairly reliable data as to the number of cases of specific industrial poisoning. Such special investigations are all the more important when it is remembered that even the most complete statistics fail to reveal all the factors which influence the health and longevity of operatives. Great differences are found in the conditions under which the work is performed, some of which are entirely avoidable, while others are not, and it is hardly fair to characterize certain trades as dangerous when experience has shown that no harm results when proper safeguards have been taken. In the consideration of this question, the personal element of the workmen, their habits, mode of life, and their physical fitness cannot be ignored.—*Pub. Health Rep.*, March 26, 1920.

Social Medicine and Medical Economics

PROPOSED PUBLIC HEALTH REORGANIZATION IN NEW YORK

Senate bill 1533, introduced into the New York Legislature on March 25, provides for an extensive reorganization and amplification of the state public health machinery. It might be regarded as an alternative and substitute for the Davenport Compulsory State Health Insurance Bill. It seeks to remedy alleged evils through the development of state public health rather than through compulsory health insurance. The bill provides that the board of supervisors (which corresponds in New York to the county commissioners in other states) of the county, with the approval of the state commissioner of health, may establish such a county, or any part of a county, as a health district and in such event shall appoint a board of health for each district consisting of five members, at least one of whom shall be a physician. The members of the board are to receive actual expenses but no salary. The board is authorized to appoint a district health officer possessing such qualifications as the public health council (an advisory body to the state department of health) may prescribe. His salary is to be fixed by the district board of health. The board of supervisors is authorized to establish a health center, or centers, which shall include (1) the erection of a new hospital, or arrangements with existing hospitals, with special provisions for hospital treatment of tuberculosis and other communicable diseases, maternity cases, children and mental diseases; (2) clinics for outpatients, including maternity, prenatal and child welfare clinics and clinics for tuberculosis, venereal diseases, mental and nervous diseases and defects, dental clinics, schoolchildren clinics and general surgical and diagnostic clinics; (3) for clinical, bacteriologic, roentgen-ray and clinical laboratories, auxiliary to the state laboratories and affording facilities for the diagnosis and treatment of disease; (4) for public health nursing service for all parts of the district; (5) for cooperation with the department of education in securing proper medical supervision and medical school inspection for schoolchildren; (6) for a periodic medical examination for such inhabitants of the district as desire it and are willing to pay a proper charge therefor; (7) for headquarters for all other public health, medical nursing and other public welfare agencies of the district. In addition to levying taxes for these purposes, the board is authorized to accept and hold in trust for the county any gifts or bequests that may be made for this purpose.

The board of supervisors is authorized to appoint a board of managers of the health center consisting of seven members, one of whom shall be the county judge, one, a woman and two, legally qualified physicians. The board of managers is authorized to appoint a superintendent to the health center and to fix his salary, to exercise general management of the center and to make rules and regulations for the care and treatment of patients and the fixing of fees and salaries. Compensation for physicians and surgeons rendering services in hospitals and clinics is to be fixed by the board of managers. The board is also authorized to erect buildings, to appoint medical boards and members of the various staffs, to employ public health nurses, to equip and maintain the health center, to keep all records, and to collect and disperse all money received. The city council of any city in the state is authorized to establish one or more health centers in the city and to exercise all of the powers conferred on the county boards of supervisors.

The last section of the bill provides for state aid in the creation and administration of health centers. In the con-

struction and equipment of hospitals, one half of the cost, not to exceed $750 a bed nor one bed for each 500 of the population affected, is to be defrayed by the state. A state grant is provided of 75 cents per day for each free patient and for one half of the cost of the installation of the outpatient clinic, not to exceed $5,000, for the expenses of free clinical treatment, not to exceed 50 per cent. of the cost nor an average of 20 cents per treatment. The state will also pay one half of the actual cost of laboratories, not to exceed $1,500 for the initial installation and equipment nor $3,000 for the maintenance of each laboratory. The state is to contribute at the rate of 10 cents per capita per annum toward the salaries of deputy health officers in health districts with a population of less than 1,500, and of 5 cents per capita per annum in districts with a population of from 1,500 to 3,000, this amount to be in addition to the salaries paid the district health officers by the county board of supervisors. The work of all health centers, hospitals, clinics and laboratories is to be subject to inspection and standardization by the state department of health, and state grants are to be paid only on the written approval of the state commissioner of health following such inspections. One hundred thousand dollars is appropriated for expenses to be incurred by the state department of health in putting this act into operation.

This bill adroitly combines in one measure provisions for county boards of health and whole time health officers, county hospitals, local health centers and dispensaries, public health nurses and local laboratories and opportunities for periodic medical examinations for the public. It aims to meet the need for better medical services, especially in rural districts, through the development and expansion of state public health organization and activities rather than by the creation of a system of compulsory health insurance. The creation and administration of departments or boards for the conservation of the public health have come in the last fifty years to be recognized as a legitimate function of the state. Compulsory, state supervised insurance is a new and untried plan in this country. If the proposed elaboration and extension of state public health functions and activities will be as effective in correcting the alleged evils as the proposed compulsory health insurance plan would be, then the burden of proof is on the proponents of compulsory health insurance to show why their plan should be adopted rather than that of the extension of state public health functions with which the American people are familiar.

NEW YORK CHAMBER OF COMMERCE OPPOSES COMPULSORY HEALTH INSURANCE

The New York Chamber of Commerce at a regular meeting held April 1 unanimously adopted a report presented by its committee on insurance, opposing the bill introduced by Senator Davenport providing for compulsory state health insurance. The committee recommended, a year ago, that a commission be created to make a comprehensive study of health insurance on behalf of the state. This recommendation was not followed. Further study of the subject has convinced the committee that compulsory health insurance attacks the problems involved from the wrong point of view and is economically unsound and unwise. In support of this conclusion the committee submits nineteen general statements, from which we quote:

It is opposed to sound public policy in a democracy, in fostering objectionable class distinctions and a dangerous tendency toward a stratification of industrial society.

It is opposed to public policy in favoring a further encroachment on private rights and privileges, including the most personal concerns of the individual, and the supervision, control and direction of the person in matters of health and welfare.

It is a danger to democracy, in that the promises made are impossible of fulfilment, and on this ground will ultimately create an unwholesome industrial unrest.

It is a delusion in that the poorest poor, who are most urgently in need of sympathetic medical and financial support and assistance, are largely if not wholly outside the sphere of social insurance activities of any and every kind.

Such demand for compulsory health insurance as exists has been artificially created by a skilful propaganda.

It is at best a palliative, and does not reach the seat of the difficulty.

It does not promote the health of the individual, but rather fosters a tendency toward malingering and an undue prolongation of minor ailments for the purpose of wrongful gain.

Experience in other countries shows that medical treatment under its rules results in a standardized method of mediocre practice—the doctor who gives his whole time to the service reduces his profession to a mere trade; the doctor who gives only part of his time to the practice is bound to give it indifferent attention.

Experience abroad has also shown that medical practice under this system tends strongly toward a system of public medicine, opinion being divided as to whether under such a system private practice should be allowed at all, or whether the system should be universal; in other words, whether the doctor should become a state employee, leaving private practice and the work of the specialists to the few who are unwilling to submit themselves to state control.

All the estimates in England have been more or less at variance with actual experience. The state contribution has been very much greater than had been assumed would be necessary at the outset.

Compulsory health insurance is an elaborate bureaucratic scheme which controls wage-earners' lives and wage-earners' incomes. The hope held out that the institution to be created will be thoroughly democratic and, apart from the overhead charges, self-sustaining, never has been and probably never will be realized. Control of essentials soon passes into the hands of the state authorities, with a corresponding increase in the power of bureaucracy.

Medicolegal

Mental Reservations of Illegal Practitioner Not Recognized

(*Pickard v. Commonwealth* (*Va.*), *100 S. E. R. 821*)

The Supreme Court of Appeals of Virginia, in affirming a judgment of conviction of defendant Pickard, a colored man, says that he was convicted and sentenced to pay a fine of $250, and to confinement in jail for three months, for practicing medicine without having obtained a certificate from the state board of medical examiners. He had been for a number of years engaged in selling, through the agency of a drug store, certain proprietary medicines of his own manufacture. He maintained an office, where his patrons would resort to consult him, and he would advise them which of his remedies, if any, was suited to their case, and direct them to the drug store where it could be bought. Subsequently he had his business incorporated, and sold his medicines direct to the trade without the intervention of a druggist. He described his general course of business substantially as follows: When a customer would call for a particular medicine, he would sell the remedy wanted, while others would describe their symptoms, and he would prescribe which of his medicine would suit the case. In such instances he stated that he made no charge for advice and received only the price of the medicine.

A witness for the commonwealth testified that her son, aged 5 years, was ill, and she took him to the office of the accused for medical advice and treatment; that he placed the child on a table and felt his pulse and examined his tongue for a few minutes, and said: "'Well, I tell you this child has the kidney trouble, and has it right bad,' and if I didn't attend to it right away it would go into meningitis or something bad." The witness requested him to prepare the right medicine for the child; but he said it would take him a long

time, and told her to come back the next day. She returned accordingly and paid him $2 for the medicine. She had heard that he could tell what was the matter with the child as soon as he saw it, and went to his office to consult him as a physician. He did not tell her the name of the remedy, but said he would prepare a medicine that would be suitable treatment. After taking the medicine the child grew worse, and she called the accused to the telephone and told him of the child's condition. He advised her to give him one or two tablespoonfuls of "Syrup of Figs" until it acted, and then give him his medicine again. The accused in essentials corroborated the testimony of the witness. He admitted that he diagnosed the case and prescribed for the patient, and compounded and supplied the remedy for compensation. He moreover acknowledged that he had done and was then doing the same thing for numerous other patients; that he claimed and announced to the public generally his ability to diagnose diseases and compound and furnish remedies for their cure. Yet he qualified his statement by alleging that he did these things, not as a physician, but to advertise his medicine, and charged for the medicine, and not for examinations and advice. He confessed that he had never been examined by the board of medical examiners, and held no certificate from them, and had no right to practice medicine in the state. The verdict of the jury was fully sustained by the evidence.

The law does not recognize the mental reservations of the accused, by which he bunglingly attempted to escape the consequences of his flagrant and habitual violations of the law. The object of the statute is to protect the public against just such impostors. A number of exceptions were taken by the accused during the progress of the trial to rulings of the court, but they did not call for special notice, since the case plainly came within the rule that, when the appellate court can see from the entire record that no other verdict could rightly have been found under correct instructions, or that the accused could not have been prejudiced by the rulings of the trial court, it will not reverse the judgment and set aside the verdict.

Hospital Treating White Patient as a Colored One

(Collins v. Oklahoma State Hospital et al. (Okla.), 184 Pac. R. 946)

The Supreme Court of Oklahoma, in affirming a judgment sustaining a demurrer to the petition in this action for alleged libel holds that a cause of action for libel cannot be maintained against a hospital for the insane on account of the act of its officers and employees in placing a white patient in that part of the institution set apart and used for colored patients. The court says that it was alleged in the petition that the defendant state hospital was the successor to a sanatorium company; that the plaintiff took his daughter, who was a white person and insane, to the sanatorium company for treatment, she being received and placed in a ward used by the white people; that a few days thereafter those in charge of the institution placed her in a ward set apart for negro patients, and entered on its records opposite her name the word "colored," and thereby held her out to the world as having negro blood, which condition continued about six months. To write of or concerning a white person that the person is colored is libelous, in and of itself, in Oklahoma. But, under the allegations of the petition, the writing of the word "colored" opposite the name of the patient, on the records of the institution, was not a publication, as it was not alleged that it was ever seen by any one, or that the books had ever been examined by any one whatsoever, or that the word thus written had ever been seen or read by any person whomsoever. This was necessary before an action of libel could be based thereon, so far as the writing of the word was concerned. Necessarily the person who wrote the word in the books must have seen it, but that person must have been the agent of the corporation, if the act was said to be the act of the corporation, and such agent was for that purpose the corporation itself. It can hardly be said to be a publication of a libel for one to show the libelous matter to himself.

Nor can the court say that placing a white patient in that part of the institution set apart for colored patients comes within the application of the Oklahoma statute so as to make it libelous. However, if it were libelous, the court doubts exceedingly whether, under the provision of the statute, the plaintiff would have a cause of action therefor.

For a second cause of action it was alleged that the defendants did commit a wrongful libel by publishing a written statement made by them to the plaintiff, in the form of a letter which stated that, in answer to one of his, I "beg to say that Lee Collins (Col.) is in fairly good mental condition; also good physical condition," etc. But the court is of the opinion that the entire contents of this letter was privileged. It was written by the superintendent of an institution having in charge the patients of the state, helpless and unfortunate as they were, to the father of one of the patients, no doubt grievously interested in that patient's welfare. The law as well as the dictates of common humanity imposed on the superintendent of that institution the duty of answering inquiries of such character, and likewise the duty of answering fully, fairly and freely as to the condition of the patient inquired about. As the court views it, the subject-matter of the letter was Lee Collins, and it was the duty of the superintendent to write to her father, not alone as to her mental and her physical welfare, but any other fact or circumstance which he should know in order that he might be the better enabled to aid and assist in her comfort and welfare. If she was regarded at the institution as colored, it was his duty to inform the father of that fact, so that, if an injury was being done to her, it could be remedied; and if the letter, which was the publication complained of, was protected by the rule of being qualifiedly privileged in all other things save and except the use of the abbreviated word "Col.," then the entire subject matter of the letter was likewise within the rule.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, New Orleans, April 26-30.

Air Service Medical Assn. of the U. S., New Orleans, April 26.
Alabama State Medical Association, Anniston, April 20-22.
Alpha Omega Alpha Honorary Fraternity, New Orleans, April 26.
American Association of Anesthetists, New Orleans, April 26-27.
American Association of Physicians, Atlantic City, May 4-5.
American Association for Thoracic Surgery, New Orleans, May 1.
American Dermatological Association, Asheville, April 22-24.
American Gastro-Enterological Assn., Atlantic City, May 3-4.
American Gynecological Society, Chicago, May 24-26.
American Laryngological Association, Boston, May 27-29.
American Medico-Psychological Assn., Cleveland, O., June 1-4.
American Otological Society, Boston, May 31-June 1.
American Pediatric Society, Highland Pk., Ill., May 31.
American Proctologic Society, Memphis, Tenn., April 22-23.
American Psychopathological Assn., Cleveland, O., June 5.
American Radium Society, New Orleans, April 26.
American Surgical Association, St. Louis, May 3-5.
American Therapeutic Society, Philadelphia, May 7-8.
Arkansas Medical Society, Eureka Springs, June 8-9.
Assn. for Study of Internal Secretions, New Orleans, April 26.
Assn. of Amer. Teachers, Diseases of Children, New Orleans, April 27.
Assn. of Military Surgeons of the U. S., New Orleans, April 24.
California State Medical Society, Santa Barbara, May 11-13.
Connecticut State Medical Society, New Haven, May 19-20.
Georgia Medical Association, Macon, May 6-8.
Illinois State Medical Society, Rockford, May 18-20.
Iowa State Medical Society, Des Moines, May 12-14.
Kansas Medical Society, Hutchinson, May 5-6.
Louisiana State Medical Society, New Orleans, April 24-26.
Maryland, Med. and Chir. Faculty of, Baltimore, April 27-29.
Massachusetts Medical Society, Boston, June 8-9.
Medical Veterans of the World War, New Orleans, April 26.
Michigan State Medical Society, Kalamazoo, May 25-27.
Mississippi State Medical Association, Jackson, May 11-12.
National Tuberculosis Association, St. Louis, Mo., April 22-24.
Nebraska State Medical Association, Omaha, May 24-26.
New Hampshire Medical Society, Concord, May 12-13.
North Carolina State Medical Society, Charlotte, April 20.
Ohio State Medical Association, Toledo, June 1-3.
Oklahoma State Medical Association, Oklahoma City, May 18-20.
Rhode Island Medical Society, Providence, June 3.
South Carolina Medical Association, Greenville, April 20-21.
So. Section Am. Laryn., Rhin. & Otol. Society, New Orleans, Apr. 27.
Texas State Medical Association, Houston, April 22-24.
The Radiological Society, New Orleans, April 23-24.
Western Electro-Therapeutic Association, Kansas City, Mo., May 27-28.
West Virginia State Medical Association, Parkersburg, May 18-20.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

March, 1920, **19**, No. 3

*Dilation of Colon in Children. A. E. Meyers, San Francisco.—p. 167.
*Osteogenesis Imperfecta Congenita. H. M. McClanahan and W. W. Willard, Omaha.—p. 181.
*Chondrodysplasia: Multiple Cartilaginous Exostoses. H. L. Dwyer, Kansas City, Mo.—p. 189.
*Calcium Metabolism of Infants and Young Children and Relation of Calcium to Fat Excretion in Stools. L. E. Holt, A. M. Courtney and H. L. Fales, New York.—p. 201.
*Renal Function in Scarlet Fever. B. S. Veeder, St. Louis and M. R. Johnston, M. C., U. S. Army.—p. 223.
Improved Needle for Sinus Therapy. A. Goldbloom, New York.—p. 229.
Review of Literature on Respiratory Diseases. L. C. Shroeder, New York.—p. 231.

Dilation of Colon in Children.—Myers is of the opinion that spasm is a cause of dilation of the colon. He reports one case in a child, aged 4 years, which was diagnosed both clinically and with the aid of the roentgen ray. Constipation dated from infancy and had been persistent. All sorts of drugs were tried, but no attention was given to the preponderance of starch in the diet. Assuming that spasm was playing a rôle in this condition, the child was put on increasing dosages of atropin, starting from 5 drops of a 1:1,000 solution, until the child complained of dryness of the mouth. Gradually, well done toast, cooked fruit and green vegetables were added to the diet and the atropin was decreased. The constipation ceased after the spasm was relieved and normal defecation followed. Five other similar cases are cited in which the starch free diet and atropin yielded equally good results.

Osteogenesis Imperfecta Congenita.—The study of the bone in the case reported by McClanahan and Willard showed evidence that the osteoblasts rising from vascular fibrous bone marrow, because of insufficient nourishment or some toxic influence, did not develop properly, but remained polygonal and later underwent metaplasia into osteoclasts. The patient was only 3 months old. Death occurred from exhaustion. According to the authors, this patient is the youngest dying from this disease on who a necropsy was performed with subsequent histologic study of the bones. A complete report of the findings is made.

Chondrodysplasia: Multiple Cartilaginous Exostoses.—Three members of one family were victims of cartilaginous exostoses. They were aged 7 and 29 years, and 20 months, respectively. The oldest patient was the father of the other two patients. The mother and another daughter, 5 years of age, were not affected. The bones involved were the tibia, femur, humerus and scapula. The cases are reported in detail, and the literature is reviewed.

Calcium Metabolism of Infants and Young Children.—In this paper the authors discuss the calcium metabolism of older children taking a mixed diet. Both healthy and rachitic children were the subjects of this study. With children taking a mixed diet, the absorption of calcium per kilogram was lower than that of infants taking modifications of cow's milk, averaging when the intake was adequate, 0.055 gm. of calcium oxid per kilogram. An intake of at least 0.09 gm. of calcium oxid per kilogram is necessary to insure a good absorption by children taking a mixed diet. The best absorption of calcium oxid occurred when the intake of fat exceeded 3.0 gm. per kilogram, and when, at the same time, for every gram of fat there was in the diet from 0.03 to 0.05 gm. of calcium oxid. When calcium in the form of chalk mixture (calcium carbonate) were added to the diet, there was a greatly increased absorption of calcium. When calcium was added as calcium acetate or as calcium phosphate the absorption was not increased. The excretion of calcium was not so closely related to the intake of calcium as in the case of infants taking modifications of cow's milk, and was not at all related to the fat intake. The calcium absorption of children with active rickets was lower than that of normal children, even though the calcium intake was ample. The calcium excretion in the stools was somewhat higher than the average excretion in the stools of normal children. During recovery from rickets, the absorption of calcium was higher than the average for normal children. This improvement accompanied the taking of cod liver oil or additional butter with a diet containing an ample amount of calcium. The calcium excretion in the stools of children recovering from rickets was lower than in the stools of normal children. Cod liver oil increased the absorption of calcium, except in cases in which the intake of calcium or of fat was very low. The substitution of vegetable fats for milk fat did not affect the calcium metabolism of children taking a mixed diet.

Renal Function in Scarlet Fever.—The observations made by Veeder and Johnston in seventeen cases of uncomplicated scarlet fever and in two cases of scarlet fever with nephritis proved that, as a routine measure, the urinary examination for albumin, as ordinarily carried out in scarlet fever, is of more value than the functional tests in announcing the onset of an impending kidney complication.

American Journal of Public Health, Boston

March, 1920, **10**, No. 3

Defense of Public Health Appropriations. E. C. Meyer, New York.—p. 201.
Control of Degenerative Diseases. F. S. Crum, Newark, N. J.—p. 210.
*Studies on Malaria Control. X. Cure of Infected Persons a Factor. C. C. Bass, New Orleans.—p. 216.
Standard Budget; Health Officer's First Need. H. Emerson, New York.—p. 221.
Vital Statistics in Canada. R. H. Coats, Ottawa.—p. 224.
African Aboriginal Therapy. P. A. E. Sheppard, Boston.—p. 227.
Causes of Army Rejections; What Health Officers Can Do to Remedy Conditions. F. R. Keefer, Carlisle, Pa.—p. 236.
Ideal Program for Child Hygiene. A. J. McLaughlin, Washington, D. C.—p. 240.
Illinois Program in Child Hygiene for 1920. C. W. East, Springfield, Ill.—p. 241.
Need of Standardization in School Hygiene Methods. H. O. Jones, Chicago.—p. 243.
School Hygiene for Rural Communities. G. Whitford, Ozona, Fla.—p. 246.
Some Important Factors in Preparation of Culture Mediums. L. Davis, Detroit.—p. 250.
Health Hazards of Dye Industry. A. K. Smith, Wilmington, Del.—p. 255.

Studies on Malaria Control.—Abstracted in THE JOURNAL, Nov. 22, 1919, p. 163.

American Journal of Roentgenology, New York

January, 1920, **7**, No. 1

Plea for Use of Fluoroscope in Examination of Heart and Great Vessels. J. G. VanZwaluwenburg, Ann Arbor.—p. 1.
Roentgenographic Findings in Pericarditis with Effusion. G. W. Holmes, Boston.—p. 7.
Roentgen-Ray Studies of Seminal Vesicles and Vasa Deferentia After Urethroscopic Injection of Ejaculatory Ducts with Thorium. A New Diagnostic Method. H. H. Young and C. A. Waters, Baltimore.—p. 16.
Roentgen-Ray Diagnosis of Patent Ductus Arteriosus. Report of Case Complicated by Presence of Saccular Aneurysm. M. J. Hubeny, Chicago.—p. 23.
Roentgen-Ray in Canadian Expeditionary Force. R. Wilson, Toronto.—p. 26.
Radiotherapy of Forty Cases of Uterine Fibromyomas. A. Beclere, Paris.—p. 30.
Radiation in Inoperable Cases of Carcinoma in Female Genito-Urinary Organs. J. G. Clark and F E. Keene, Philadelphia.—p. 36.
Three Years' Experience with Radium in Cancer of Uterus. E. C. Samuel, New Orleans.—p. 42.
Biological Reaction of Carcinoma Cells Produced by Radium Rays. Technic of Radium Therapy in Gynecology. H. Schmitz, Chicago.—p. 52.

Boston Medical and Surgical Journal

April 1, 1920, **182**, No. 14

Osler as a Bibliophile. E. C. Streeter, Boston.—p. 335.
Osler as His Students Knew Him. J. H. Pratt, Boston.—p. 338.
Osler in the Early Days at the Johns Hopkins Hospital. W. T. Councilman, Boston.—p. 341.
Renal Function in Vascular Hypertension. J. P. O'Hare, Boston.—p. 345.

California State Journal of Medicine, San Francisco

March, 1920, **18**, No. 3

Organization and Management of Hospitals. W. E. Musgrave, San Francisco.—p. 71.
Neuro-Otology: Its Relation to General Medicine. F. C. Lewitt, San Francisco.—p. 72.

*Comparison of Action of Roentgen Rays and Radium. A. Soiland, Los Angeles.—p. 76.
Refraction and Medicine. P. Sumner, San Francisco.—p. 78.
Goiter. A. B. Cooke, Los Angeles.—p. 82.
Cancer of Ear, Nose and Throat; Tuberculosis, Lupus and Various Minor Affections Treated by High Frequency Current. C. E. Welty, San Francisco.—p. 84.
Aviation's Debt to Medicine. C. G. Stivers, Los Angeles.—p. 87.
*Abducens Palsy; Transplantation of Vertical Recti in Three Cases. R. O'Connor, Oakland.—p. 90.
Treatment of Fresh and Ununited Fractures of Femoral Neck. E. Jones, Los Angeles.—p. 92.
War Wounds of Sinuses. H. A. Fletcher, San Francisco.—p. 94.
Examination and Classification of Aviators with Special Reference to Effects of High Altitudes. J. F. Grant.—p. 96.

Comparison of Action of Roentgen Rays and Radium.—Soiland believes that the roentgen rays offer decided advantages in the treatment of lesions covered by, or affecting, the epithelium. On mucous membranes or in cavities where soft tissues predominate radium becomes the element of choice. This is particularly true in lesions involving the mouth and upper respiratory tract, the vagina, the uterus and the rectum. The best results in general are obtained by a judicious combination of both.

Abducens Palsy: Transplantation of Vertical Recti in Three Cases.—O'Connor states very emphatically that in cases of abducens palsy relief is possible, in spite of statements to the contrary in most textbooks on ophthalmology. Therefore, these patients should not be dismissed as incurable or told to wear a patch over one eye permanently but should be referred to the ophthalmologist early in order that the progress may be watched and operation done as soon as it is certain that power is not returning. The author describes his method of procedure and reports cases.

Iowa State Medical Society Journal, Des Moines

March 15, 1920, **10**, No. 3

Gallbladder from the Surgeon's Standpoint. O. J. Fay, Des Moines.—p. 63.
Application to Civil Practice of Therapeutic Principles Established in Treating War Injuries to the Thorax. J. L. Yates, Milwaukee.—p. 67.
Value of Public Health Education. E. G. Birge.—p. 69.
Xerophthalmia. Report of Case. R. H. Parker, Des Moines.—p. 71.
Some Suggestions. G. Kessel, Cresco.—p. 74.

Indiana State Medical Ass'n Journal, Fort Wayne

March 15, 1920, **13**, No. 3

Child Hygiene and the Doctor.—A. E. Schweitzer, Indianapolis.—p. 73.
*Relation of Ophthalmology to Child Hygiene. J. R. Newcomb, Indianapolis.—p. 77.
*Relation of Otolaryngology to Child Hygiene. D. W. Layman, Indianapolis.—p. 79.
*Meningitis: Neurologic Manifestations. C. D. Humes, Indianapolis.—p. 85.

Relation of Ophthalmology to Child Hygiene.—This paper was abstracted in THE JOURNAL, Oct. 18, 1919, p. 1237.

Relation of Otolaryngology to Child Hygiene.—This paper was abstracted in THE JOURNAL, Oct. 18, 1919, p. 1237.

Meningitis: Neurologic Manifestations.—This paper was abstracted in THE JOURNAL, Oct. 25, 1919, p. 1308.

Journal of Laboratory and Clinical Medicine, St. Louis

March, 1920, **5**, No. 6

Chemical Changes in Blood in Disease. V. C. Meyers, New York.—p. 343.
*A Third Model Illustrating Some Phases of Kidney Secretions. M. H. Fisher and G. D. McLaughlin, Cincinnati.—p. 352.
Epidemiology of Influenzal Pneumonia. C. Lynch and J. G. Cumming, Newport News, Va.—p. 364.
Studies on Pathogenic Anaerobes; Bacillus Welchii. B. Jablons, Washington, D. C.—p. 374.
*Method for Collection of Urine in the Dog From Each Kidney Separately. F. S. Hopkins and W. C. Quinby, Boston.—p. 384.
Some Limitations of Flotation Method of Fecal Examinatin. J. D. McDonald, Berkeley.—p. 386.

Some Phases of Kidney Secretion.—The question is raised by Fisher of the mechanism by which water is secreted by such a secreting parenchyma as a kidney. The experimental evidence is reviewed which indicates that only "free" water can be separated from the blood and that the separation of such water costs the kidney no work. This supports the conclusion that such separation is a mere filtration process, and since the secreting parenchyma of such an organ as the kidney is a hydrated colloid which has properties closely akin to a solid hydrated soap, the filtration properties of such a soap (sodium stearate) were studied to see whether any analogy exists between its behavior and what may be observed biologically. Hydrated sodium stearate allows water to pass through it under slight hydrostatic pressure, the ease of such passage being increased as the concentration of the hydrated colloid is lowered. While "free" water passes readily through such a hydrated colloid, water tied to a hydratable colloid (liquid sodium oleate) cannot. Salt solutions lead to a greater filtration of water than plain water, and this (*a*) according to their concentration and (*b*) their kind, generally speaking. The higher the concentration of any salt, the greater the filtration of water. On the other hand, at given concentration, salts of ammonium or potassium produce less filtration than salts of sodium, and these less than those of magnesium or calcium. The theory of the action of these effects is discussed, it being pointed out that because of the existent differences in chemical composition of fatty acids and of the polymerized amino-acids known as protein it is possible in the former to produce only one series of salts as different bases are introduced into the fatty acid. In the case of the proteins a similar series may be produced, but because of the existence in the latter of NH groups, a second may be produced, through the linking of acid with these groups. Colloid chemical and physiologic behavior are, then, an expression of the solvation and solubility properties of the different compounds thus formed. The dangers of applying without due reserve indicator methods and the laws of dilute solutions of electrolytic dissociation, etc., to the normal cells and fluids of the body but not to their secretions is reemphasized.

Collection of Urine from Each Kidney Separately.—Hopkins and Quinby use the uterus as a receptacle of the products of one kidney while the normal relations between the bladder and other kidney are maintained.

Kentucky Medical Journal, Bowling Green

March, 1920, **18**, No. 3

Physical Examination of School Children. A. O. Pfingst, Louisville.—p. 63.
Fractures of Cervical Vertebrae; Diagnosis and Treatment. F. P. Strickler, Jr., Louisville.—p. 64.
War Surgery of Bones and Joints as Applied to Civil Practice. I. A. Arnold, Louisville.—p. 68.
Transylvania Medical Library. A. H. Barkley, Lexington.—p. 74.
Influenza or La Grippe. W. E. Reynolds, Hopkinsvlle.—p. 78.
Pneumonias and Their Treatment. A. Baker, Berea.—p. 81.
Diagnosis of Pulmonary Tuberculosis. S. R. Fairchild, Kevil.—p. 84.

Maine Medical Association Journal, Augusta

March, 1920, **10**, No. 8

Treatment in Tuberculosis. C. B. Sylvester, Portland.—p. 235.
Incomplete Mastoid Operation as a Cause of Delayed Healing. F. T. Hill, Waterville.—p. 243.
A Permanent Board of Organization for the Maine Medical Association. J. A. Spalding.—p. 250.

Medical Record, New York

March 27, 1920, **97**, No. 13

*Influence of Male on Production of Twins. C. B. Davenport, Cold Spring Harbor, N. Y.—p. 509.
Medical Aspects of Endocrinology. J. J. Hertz, New York.—p. 511.
Oral Sepsis: Rôle in Certain Orthopedic Conditions. J. Grossman, New York.—p. 514.
*Feet, and Rebuilding Broken Arches. C. Cross, San Francisco.—p. 519.
Saccharin. S. H. Blodgett, Boston.—p. 521.
Measures of Intelligence Diagnostically Remeasured. J. V. Haberman, New York.—p. 523.

Influence of Male and Lethal Factors on Production of Twins.—The presence of lethal factors in the ovum or spermatozoon is regarded by Davenport as an influence in the fertilization and development of an ovum. Lethal factors may be brought into the zygote by the egg alone, by the sperm alone, or by both. They are not found in all the germ cells; it may be, in only a small proportion of them. When they occur in the gametes of both consorts, small families with some feeble children may be expected. But when they are absent in the germ cells of both parents, then,

in a good environment, the fertilized egg will develop vigorously with good prospects of reaching maturity. It is in such families that any tendency toward double ovulation will be expressed in the production of healthy twins. Statisticians have long recognized that the proportion of twins is larger in highly fecund families than in those that produce few offsprings, and this is now seen to be because in such highly fecund families the germ cells contain few lethal factors and there is a larger chance that double ovulation will result in twins. Davenport is convinced that it is thus clear where the male factor comes in in twin production, for the father can, as much as the mother, determine whether both of a pair of simultaneously ovulated eggs shall be fertilized, and whether or not they shall receive lethal factors.

Rebuilding Broken Arches.—A plan of treatment to rebuild the broken arch, while the feet are in daily use during the process of rebuilding, is reported by Cross. The plan consists of a system of exercises on specially designed exercising appliances, massage, manipulation, mechanical force, static and dynamic force, support, and then gradual removal of the support. In rebuilding broken arches, the aim of this system of treatment is to reconstruct the arch and to strengthen the foot that it will stand ordinary usage, without the aid of an arch support. Cross emphasizes that arch supports, at best, are but splints and should be used only as such. Constantly wearing any kind of a rigid splint weakens the muscles because free action is restricted. This is especially true when metal splints, in the form of arch supports, are worn under the feet, and the general results from their use is a degree of atrophy of some muscles and weakening of others. The process of rebuilding broken arches by this system aims to follow the same lines followed by engineers to replace a bridge span, or a house foundation, that is out of alignment. A careful drawing is made of the foot and this is surveyed to determine the degree of distortion or displacement. Then begins a system whereby the broken arch is blocked up or strapped up by degrees, as rapidly as possible with comfort, until normal function is restored. Clumsy and freak shoes are not a part of this system of treatment. Any shoe the patient selects which is long enough and wide enough can be worn.

Modern Hospital, Chicago

March, 1920, **14**, No. 3

Brief Review of Hospital Standardization in 1919. J. F. Bresnahan, Chicago.—p. 163.
Hospital Construction in 1919. R. E. Schmidt, Chicago.—p. 173.
Development and Progress in Field of Hospital Administration. A. R. Warner, Cleveland.—p. 176.
Progress in Nursing Education During 1919. I. M. Stewart, New York.—p. 179.
The Present Trend of Medical Social Work. E. G. Henry, Indianapolis.—p. 185.
Salient Points of Progress in Tuberculosis Sanatorium Development in 1919. T. B. Kidner, New York.—p. 188.
The 1919 Laboratory Field Retrospect. L. B. Wilson, Rochester, Minn.—p. 191.
Health Progress in Industry in 1919. B. B. Lyons, Chicago.—p. 193.
Progress in Mental Hygiene, 1919. F. E. Williams.—p. 197.
Progress in Out-Patient Service During 1919. M. M. Davis, Boston.—p. 201.
Developments in Dietetics During the Year 1919. L. Graves, Ithaca.—p. 203.
Year's Review of Drugs and Chemicals. J. K. Thum, Philadelphia.—p. 207.
Progress in Eradication of Venereal Disease. A. N. Thomson, New York.—p. 208.
Health Center Movement in United States. J. A. Tobey, Washington, D. C.—p. 212.
Hospital Relay of World War. F. Kramer and R. H. Kettell, Washington, D. C.—p. 215.
Landscape Treatment of Hospital Grounds. C. W. Leavitt.—p. 229.
Suggestions for Health Legislation. H. W. Jordan, Syracuse, N. Y.—p. 230.
Health Insurance. A. R. Warner, Chicago.—p. 233.
Group Action Helps Raise Rates of Milwaukee Hospitals. C. W. Munger, Milwaukee.—p. 239.
Commercial Syrups. J. P. Street, Indianapolis.—p. 248.
A History Method for Gonorrheal Cases. H. A. Fisher, Brooklyn.—p. 252.

New York Medical Journal

March 27, 1920, **111**, No. 13

*Pregnancy Complicated by Large Fibroid Tumor. J. C. Applegate, Philadelphia.—p. 529.
Lethargic Encephalitis. Report of Cases. H. Climenko, New York.—p. 531.
Umbilical Hernia. N. A. Ludington, New Haven, Conn.—p. 540.
Two Cases of Displacement of Ilium. E. F. Cyriax, London.—p. 546.
*Case of Wladimiroff-Mikulicz Operation. M. H. Vegas, Buenos Aires.—p. 550.
Extensive Destruction of Sella Turcica Without Clinical Symptoms. C. Rosenheck, New York.—p. 554.
What is the Cause of Goiter? J. C. O'Day, Honolulu.—p. 556.
Buccal Leukoplasia. C. G. Cumston, Geneva.—p. 556.

Pregnancy Complicated by Large Fibroid Tumor.—The point made by Applegate in connection with the report of this case is, that sterility from any of the well known causes, including abnormalities of position of construction of the uterus, tubes or ovaries, faulty internal secretions, and hyperacidity of the vaginal secretions, may be regarded at least as a predisposing cause of fibroids of the uterus. In other words, absence of the childbearing functions favors hyperplasia of the loosely constructed involuntary muscle fibers and connective tissue cells of the uterus.

Case of Wladimiroff-Mikulicz Operation.—This operation consists in the removal of the tarsus and of the distal end of the bones of the leg and then placing the foot in a marked equinus position in such a way as to transform the walk from plantigrade to digitigrade. The indications for this operation are tuberculosis of the tarsus and ankle, chronic ulcers of the heel, fractures accompanied by osteomyelitis of the calcaneus and neighboring bones, as in the case described by Vegas. Of late indications have been extended to include the lengthening of limbs shortened by pathologic luxations in the coxalgia or ample resections of the knee followed by shortening of the member in advanced equinoparalytic feet.

Northwest Medicine, Seattle

March, 1920, **19**, No. 3

Principles of Healing. J. D. Windell, Spokane.—p. 59.
Review of Military Urologic Service. A. H. Peacock, Seattle.—p. 64
Urinary Frequency. A. E. MacKay, Portland.—p. 68.
Urinary Fistulae. G. S. Whiteside, Portland.—p. 69.
Phosphatic Index as Aid in Diagnosis. J. H. Dowd, Buffalo.—p. 71.
Differential Diagnosis in Epidemic Lethargic Encephalitis. K. Winslow, Seattle.—p. 73.

Oklahoma State Medical Ass'n Journal, Muskogee

March, 1920, **13**, No. 3

Hypertrophic Stenosis of Pyloris in Infancy. G. A. Wall, Tulsa.—p. 87.
Exophthalmic Goiter. W. H. Livermore, Chickasha.—p. 94.
Acute Infections of Upper Respiratory Tract. A. L. Guthrie, Oklahoma City.—p. 96.
Primary Glaucoma; Recovery Without Operation. J. R. Phelan, Oklahoma City.—p. 99.
Surgery of Tonsil. H. C. Todd, Oklahoma City.—p. 100.
Ear in Recent Influenza Epidemic. L. C. Kuyrkendall, McAlester.—p. 102.

Rhode Island Medical Journal, Providence

March, 1920, **3**, No. 3

Anesthetic Problem in Lung Surgery. J. T. Gwathmey, New York.—p. 41.
*Theilerium Hominis. C. F. Peckham, Providence.—p. 47.

Theilerium Hominis.—Peckham reports a hematozoic parasite found in cases of mucous colitis and describes its life history. In searching the literature of human parasites, he was unable to find any report of the observation of a hematozoic organism of dumbbell form.

Southwestern Medicine, El Paso, Texas

March, 1920, **4**, No. 3

Influenza Epidemic Among Employees of Consolidated Arizona Smelting Company, Associated Companies and Their Families. C. S. Vivian and E. R. Charvoz, Globe, Ariz.—p. 1.
Smith-Indian Cataract Operation. E. N. Bywater. Tucson, Ariz.—p. 6.

Tennessee State Medical Ass'n Journal, Nashville

March, 1920, **12**, No. 11

Headache; Its Constitutional Causes. O. S. Warr, Memphis.—p. 399.
Headaches from Nasal Origin. J. J. Shea, Memphis.—p. 402.
Roentgen-Ray Diagnosis in Some Bone Pathology. J. H. King, Nashville.—p. 404.
Malformations of Anus and Rectum. D. R. Pickens, Nashville.—p. 406.
Dental Sanitation. F. W. Brownfield, Granville.—p. 409.

Virginia Medical Monthly, Richmond

February, 1920, **46**, No. 11

Relation of Etiology to Treatment of Pelvic Inflammation. C. R. Robins, Richmond.—p. 279.
*Treatment of Bronchial Asthma with Vaccines. J. M. Hutcheson and S. W. Budd, Richmond.—p. 281.
Enterostomy for Postoperative Intestinal Obstruction. A. S. Brinkley, Richmond.—p. 283.
Diabetes. W. W. Silvester, Norfolk.—p. 286.
Tetany in Adults. W. H. Higgins, Richmond.—p. 290.
Perineum, As It Concerns Obstetrics. G. B. Byrd, Norfolk.—p. 295.
Old Age. R. H. Carthright, Vinton.—p. 297.

Treatment of Bronchial Asthma with Vaccines.—Of a series of ninety patients examined and in whom a diagnosis of bronchial asthma was made, eighty-one have been treated with autogenous vaccines by Hutcheson and Budd. So far as possible, those cases were selected in which obvious and accessible foci of infection had been removed. Most of these patients had suffered over a considerable period and were well versed in the various cures, while in many instances one or more operations on the nose, throat or sinuses had failed to give relief. Where the first series of injections was ineffective, if possible, a second vaccine was prepared and administered and this was also done in a number of cases after relapse had occurred. In fifty-three cases (74.6 per cent.) there followed the administration of the vaccine either complete freedom from asthma or a definite decrease in the frequency and severity of the attacks. The longest duration of complete relief was three years. The longest period of relative relief was four years and two months. In eighteen cases (25.4 per cent.) no definite benefit was derived from the vaccine. In none of these cases, however, was the treatment repeated after the first series of injections had failed.

West Virginia Medical Journal, Huntington

March, 1920, **14**, No. 9

Surgery of Chest. O. F. Covert, Moundsville.—p. 321.
Treatment of Ununited Fractures. A. J. Noome, Wheeling.—p. 337.
Principles Preliminary to Treatment of Functional Nervous Disorder, T. A. Williams, Washington, D. C.—p. 346.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

February, 1920, No. 235

History of Electrotherapy. W. J. Terrell.—p. 277.

Dublin Journal of Medical Science

March, 1920, Fourth Series, No. 1

Dysentery in Dublin in 1919. A. Stokes and J. W. Bigger.—p. 3.
Problem of Dublin Voluntary Hospitals. R. J. Rowlette.—p. 9.
Case of Lethargic Encephalitis. G. E. Nesbitt.—p. 24.
*Modified Kjeldahl Method for Estimation of Nitrogen. Carbazol Test for Nitrites. Color Test for Tryptophane in Urine. W. A. Fearon.—p. 28.

Tests for Nitrogen, Nitrites and Tryptophan in Urine.—The most important alterations in the original technic of the Kjeldahl method made by Fearon concerned the incineration. He found that a mixture of sulphuric and phosphoric acids gave a much better result than sulphuric acid alone. The following mixture is recommended: sulphuric acid, 100 c.c.; phosphoric acid, 200 gm.; copper sulphate, 5 gm. The mixture is best made by dissolving the phosphoric acid and the copper sulphate in the minimum amount of water, and then adding the sulphuric acid. The amount required for incineration will depend very much on the material under examination. Generally, from two to three times its volume will be sufficient. For extensive work the steam distillation method has been found the most satisfactory. Rapid estimations can be carried out very well by the Cole method of distilling with alcohol. For titrations, methyl red, 0.1 per cent., was found to be a very good indicator. The following is stated to be a simple test for nitrites in urine or similar fluids: To a few cubic centimeters of strong sulphuric acid in a test tube a very small quantity of carbazole is added and well shaken. If the sulphuric acid is pure, no color change will be observed. Then, on adding a drop of urine, if nitrites are present, a deep green color will develop. The test is extraordinarily sensitive, and will show nitrites to the extent of about one part in half a million. If urine containing tryptophan be treated with excess of the glyoxylic reagent and a drop is added to strong sulphuric acid, the tryptophan condensation body interacts with the nitrites of the urine to give a deep green color. This test is not given by indol or skatol.

Indian Medical Gazette, Calcutta

February, 1920, **55**, No. 2

Ulceration of Stomach and Duodenum and Resultant Obstruction in Outlet of Stomach Treated by Posterior Gastro-Euterostomy in a Series of One Hundred Cases. S. H. Pugh.—p. 41.
Typhus and Typhus-Like Fevers in Birjand, East Persia. A. S. Fry. —p. 47.
Medical Inspection of Schools. B. N. Ghose.—p. 50.
Kala-Azar. S. Kundu.—p. 53.
Second Series of Twenty-Five Cases of Malaria Treated by Hypodermic Injections of Cinchonin Bihydrochlorid. D. S. Ollenbach. —p. 57.
Acute Necrotic Parotitis. R. C. McWatters.—p. 57.
Case of Pneumococcal Arthritis Complicating Tonsillitis. C. Corner. —p. 58.
Congenital Abnormalities. J. C. Aich.—p. 59.
Cobra Poisoning. K. K. Alandikar.—p. 60.

Japan Medical World, Tokyo

Feb. 7, 1920, **10**, No. 6

Nature of Virus of Typhus Fever. S. Kusama.—p. 125.
Action of Epinephrin and Hydrochloric Acid against Tetanus Toxin. R. Kobayashi.—p. 126.

Feb. 14, 1920, **10**, No. 7

Anthropometry of Civilized Man. A. Macdonald.—p. 145.

Feb. 21, 1920, **10**, No. 8

Anthropometry of Civilized Man. A. Macdonald.—p. 165.

Journal of Pathology and Bacteriology, Cambridge

*Bacteriologic Characteristics of Tubercle Bacilli from Different Kinds of Human Tuberculosis. A. S. Griffith.—p. 129.
Serologic Groupings of Vibrion Septique and Their Relation to Production of Toxin. M. Robertson.—p. 153.
*Inagglutinable Form of Shiga's Dysentery Bacillus, Experimentally Derived from an Agglutinable Culture. T. H. C. Benians.—p. 171.
Method of Determining Several Viscosities Simultaneously. J. Holker. —p. 177.
Viscometer as a Means of Determining Specific Gravity. J. Holker. —p. 185.
Method of Testing Temperature Sense. J. Holker.—p. 188.
Methods of Cultivating Anaerobic Bacteria. J. Holker.—p. 192.
*Streptococcal Ulcerative Endocarditis of Aortic Valves, Occurrinig in an Infant Aged Six Months. J. H. Dible.—p. 196.
Classification of Forty-Eight Strains of Flexner Y and Allied Bacilli Mainly by Serologic Tests. E. M. Berridge and E. Glynn.—p. 199.
Serum Reaction in Bacillary Dysentery. Observations on Agglutination, with Special Reference to the Use of Freshly Prepared Bacillary Emulsions. J. W. M'Leod and A. G. Ritchie.—p. 217.
Synthesis of Tryptophane by Certain Bacteria; Nature of Indole Formation. W. J. Logie.—p. 224.

Bacteriologic Characteristics of Tubercle Bacilli from Different Kinds of Human Tuberculosis.—The main objects of Griffith's investigations were (1) to determine by the examination of unselected cases the relative proportions of the human and bovine types of tubercle bacilli in different kinds of human tuberculosis, and (2) to ascertain the frequency of occurrence and the distribution in the human body of variant strains of tubercle bacilli. Of 1,068 persons examined, 803 showed human bacillus infection; 194 bovine bacillus infection and five a mixed infection. Of various regions involved, the examination showed that bovine infections occurred as follows: Bones and joints, 19.7 per cent.; genito-urinary organs, 17.65 per cent.; cervical glands, 46.3 per cent.; meninges, 20 per cent.; scrofulodermia, 34.65 per cent.; lupus, 48.9 per cent. As to the age periods, bovine infection occurred as follows: during first five years of life, 37.55 per cent.; from 5 to 10 years, 29.45 per cent.; from 10 to 16 years, 14.66 per cent.; after 16, 6.25 per cent.

Inagglutinable Form of Shiga's Dysentery Bacillus Derived from Agglutinable Culture.—An inagglutinable strain of Shiga's bacillus was experimentally produced by Benians from an agglutinable strain by subcutaneous inoculation into a guinea-pig of the agglutinable bacteria suspended in mucilage of tragacanth. This inagglutinable bacillus (as

isolated from a separate colony), from time to time threw off agglutinable strains, especially soon after it was first isolated. The inagglutinable colonies were of two types, clear and opaque, on agar, but not distinguishable in broth cultures. The inagglutinable strain usually sedimented both in broth and saline. The inagglutinable strain failed to absorb agglutinin from a standard serum; it also failed to produce agglutinin when injected into rabbits. The agglutinable strain, derived from the inagglutinable, absorbed agglutinins entirely from a standard serum; on injection into rabbits it produced an agglutinating serum. Both strains were highly pathogenic for rabbits, the inagglutinable strain apparently more so than the other. Rabbits immunized against either strain were protected against a lethal dose of the other strain. In the animal injected with the inagglutinable bacillus an immunity developed against both agglutinable and inagglutinable strains without the production of any agglutinins. The development of agglutinins is not, therefore, necessarily a part of the processes of immunity. The inagglutinable strain was much more rapidly destroyed by the bactericidal bodies of the serum than the agglutinable. The guinea-pig inoculated with the bacteria embedded in mucilage formed no agglutinins or demonstrable protective antibodies. It is suggested that the experiment throws light on two clinical conditions: (1) chronic typhoid abscess; (2) the "carrier" condition of enteric and dysentery bacilli in the alimentary system.

Streptococcal Ulcerative Endocarditis of Aortic Valves in Infant Aged Six Months.—The total duration of fatal illness of the infant whose case is cited by Dible was only eight days. The condition developed while the child was in the hospital, suffering from crusted impetiginous sores on the head and upper part of the chest, and emaciation; there was also a discharging ear. It was noted, on admission, that the child was small. It frequently vomited its feeds, and also suffered from diarrhea. Under treatment the general condition improved, and three weeks after admission the sores on the head and body were healed, the diarrhea had ceased, and the general condition was improving. This improvement continued until the twenty-seventh day of residence in hospital. Up till this period the temperature had been within normal limits, but on the evening of this day it commenced to rise and on the following evening reached 101 F. During the six succeeding days the temperature oscillated irregularly between normal and 102 F., usually remitting in the mornings. No cause for this acute illness was discovered, and on the seventh day of its duration the child died rather suddenly. The examination of the thoracic and abdominal viscera showed the presence of moderate bronchopneumonic consolidation of the lower lobes of both lungs. The spleen was enlarged and somewhat soft, but not diffluent. The kidneys showed numerous well marked miliary infarcts of recent date, a number of which contained minute centers of suppuration. The heart weighed 30 gm.; its external surface, and that of the pericardium, was normal. On slitting up the cavities, the posterior cusp of the aortic valve showed recent acute, ragged, friable granulations, situated somewhat below the line of contact of the cusps; a similar patch of granulation was present on the wall of the ventricular septum below the valve. The affected cusp was found to be perforated, and the interventricular septum nearly so, the process having reached as far as the endocardium of the right ventricle, but not having perforated it. The other valves and cavities of the heart were healthy. None of the other organs available for examination showed changes worthy of note. Histologic examination of a piece of the vegetation, and sections of the infarcted areas of the kidney, showed very clearly, however, that the infecting organism was a streptococcus. The interest in this case lies in the fact of the extremely early age at which the affection occurred, and of its acute course. It was clinically unconnected with the gastro-intestinal disturbance for which the child was admitted, since the acute symptoms were only developed at the end of the period of stay in hospital when the impetigo and gastro-intestinal condition had disappeared. This case does not come within the category of the so-called "rheumatic" form of malignant endocarditis which is met with in childhood, and in which the necropsy findings differ only in degree from those of "simple" endocarditis; it rather corresponds to the more virulent of the adult types of endocarditis associated with the suppuration of infarcts derived from the diseased valves.

Lancet, London

March 13, 1920, **1**, No. 5037

Surgical Aspect of Dysentery. Z. Cope.—p. 579.
*Pleural Effusion: Its Cytology and Results of Paracentesis. D. S. Page.—p. 585.
Periodicity of Influenza. B. E. Spear.—p. 589.
Use of Univalent Serum in Treatment of Cerebrospinal Fever. H. S. Banks.—p. 591.
Etiology of Effort Syndrome. R. G. Barlow.—p. 593.
Use of Autogenous Bone Grafts in Treatment of Certain Simple Fractures of Bone. B. Hughes.—p. 595.
*Torsion of Appendix. E. C. Bevers.—p. 597.
Tobacco Amblyopia in a Woman. M. L. Hine.—p. 597.
*Case of Juvenile Tabes. D. Kerr.—p. 598.

Cytology of Pleural Effusion.—Page points out that a predominance of polymorphonuclear neutrophilic cells occurs not uncommonly in chronic pleural effusion complicating pulmonary tuberculosis. When it occurs, in the absence of secondary infection of the fluid, it suggests the possibility of hydropneumothorax being present; probably it may occur without this complication as the result of a virulent tuberculous infection. A predominance of small mononuclear cells is usual in tuberculous pleural effusions. It is not uncommon in effusions associated with neoplasms. It may occur in renal cases. Effusions in which coarsely granular eosinophilic cells are found in large numbers are probably not tuberculous. Basophilic cells occur rarely, and only in small numbers. On theoretical grounds it seems better to reserve paracentesis for the relief of urgent symptoms. In the analysis of this series of cases no clear evidence is obtained either in favor of or against paracentesis.

Torsion of Appendix.—When Bevers first saw this patient, she was suffering from abdominal pain and vomiting; sixty hours before admission she was seized with severe pain in the right iliac fossa during the night and vomited almost at once. The pain increased in severity and vomiting continued at intervals. On admission her pulse was 120 and her temperature 100 F.; the abdomen was slightly distended and generally rigid, this rigidity being most marked over the lower half of the right rectus, and there was acute tenderness on pressure in the right iliac fossa. Bevers regarded the case as one of acute appendicitis with perforation, and operation was at once undertaken. The appendix was found hanging over the brim of the pelvis; both it and the mesoappendix were much swollen and dark purple in color, and in places becoming black. At the base of the appendix and close to the cecum were two complete twists, there were no adhesions, and the appendix was quite free in the peritoneal cavity. The appendix was removed and the abdomen closed without drainage, recovery being uneventful. The appendix was 3 inches long, in a condition of acute gangrene, and contained a small concretion near the tip.

Juvenile Tabes.—Kerr's patient was only 14 years of age. The three striking features of the case: (1) lightning pains, (2) primary optic atrophy, (3) absent knee jerks, established the diagnosis of juvenile tabes in spite of the absence of a history pointing to hereditary syphilis and of the negative blood and cerebrospinal fluid Wassermann.

South African Medical Record, Cape Town

Feb. 14, 1920, **18**, No. 3

Blackwater Fever in Central Africa during the War. A. P. Morse-Anderson.—p. 43.
South African Cercariae. F. G. Cawston.—p. 49.

Bulletin Médical, Paris

Feb. 7, 1920, **34**, No. 7

Reorganization of the Hospitals of Paris. A. J. L. Brocq.—p. 113.

Feb. 21, 1920, **34**, No 11

*Radium Therapy in Gynecology. Fabre.—p. 169.

Radium Treatment in Gynecology.—Mme. Fabre reviews the various indications and the technic for radium treatment

in disease of the female genital organs, saying that the gynecologist of yesterday was a physician, today he is a surgeon, and tomorrow he may be a radium therapeutist.

Journal de Médecine de Bordeaux

Feb. 25, 1920, **91**, No. 4

*Diphtheria Mortality. Dubourg and Guénard.—p. 83.
*Subconjunctival Lipoma. Cabannes and Dupérié.—p. 86.
Anatomy of Veins in Leg. G. Jeanneney.—p. 87.
*Medical Inspection in Schools. Gèzes.—p. 89.

Diphtheria Mortality.—Dubourg and Guénard review the experiences with diphtheria at the Children's Hospital at Bordeaux during the last thirty years. The mortality was 54 per cent. in 1888, but the annual average after antitoxin was introduced has been 7.28 per cent., with a minimum of 1.53 per cent. of 195 cases in 1907.

Subconjunctival Lipoma.—The fibrolipoma described was removed from the conjunctiva in the outer portion of the inferior culdesac of a healthy woman of 29. The tumor had been first noticed two months before.

Necessity for Examination of Ear and Nose in Medical Inspection of Schools.—Gèzes found in 117 children of the upper school grades at Bordeaux that over 42 per cent. had spurs on the nasal septum. Over 36 per cent. had coryza with hypertrophy; 56.4 per cent. had chronic otitis media, and 12.8 per cent. cicatricial otitis, in addition to the over 34 per cent. with enlarged tonsils and the 35.9 per cent. with adenoids.

Journal de Radiologie et d'Electrologie, Paris

January, 1920, **3**, No. 12

*Electric and Roentgen-Ray Treatment of Sciatica. A. Zimmern.—p. 533.
Electrocardiography and Roentgenoscopy of the Hearts of Eight Athletes. J. Cluzet.—p. 540.
*Precautions in Radiotherapy. M. L. Gunther.—p. 544.

Electric and Roentgen Treatment of Sciatica.—Zimmern assumes that true sciatica can be traced to irritation or compression of the roots of the nerve, not severe enough to arrest the motor impulse. It may be amenable to direct irradiation or to indirect revulsion by a faradic or high frequency current or jet of hot air. Other physical measures seem to have only a symptomatic action. His experience warns against trying to combine roentgen-ray treatment with electric revulsion; the latter seems to undo the effect of the former. He usually gives 2 H units at a sitting. Relief may be obtained at the very first, but the second or third is generally followed by the subsidence of all the pain. Sometimes there is an exacerbation of the pain the evening or the day following each sitting. This exacerbation always proved a sign of favorable omen. If three sittings do not accomplish the result, he waits eight or ten days, to save the skin, and then repeats the course with doses of 3 instead of 2 H. The Achilles tendon reflex seldom returns, or not until very late.

Precautions in Roentgen-Ray Work.—Gunther is the director of an establishment for manufacture of electric and radiologic apparatus and devices, and he gives a long list of special precautions to be observed by the radiologist, for himself and for the patient, to avert immediate and tardy injury.

Presse Médicale, Paris

Feb. 7, 1920, **28**, No. 11

*Fibrotuberculoma in the Larynx. G. Portmann.—p. 101.
*Quantitative Test for Albumin in the Urine. L. Dupuy.—p. 104.
*Gas Cysts in the Abdomen. C. Lenormant.—p. 104.

Laryngeal Fibrotuberculoma.—Portmann was able to watch through several years the evolution of a fibrous tuberculous tumor in the larynx. It had been mistaken for cancer at first, and the larynx was exposed for laryngectomy. The tissues around were found infiltrated and thickened, so the proposed operation was abandoned, and the patient has been in fairly good health during the three years since he has been wearing his tracheal tube.

Albumin Test.—Dupuy compares the turbidity of a standard solution of albumin with that of the urine being examined after each has been treated with Esbach's citric-picric acid reagent.

Gas Cysts of the Abdomen.—Lenormant analyzes twelve recent (since 1910) works on the subject of cystic pneumatosis. It was recently discussed editorially in THE JOURNAL, March 13, p. 739.

Feb. 11, 1920, **28**, No. 12

Functioning of the Diaphragm in Pleurisy with Effusion. P. E. Weil.—p. 113.
Technic for End-to-End Anastomosis of Small Intestine after Resection. H. Costantini.—p. 113.
*Radium Therapy. Baud and L. Mallet.—p. 115.

Radium Therapy.—Baud and Mallet announce that they are preparing receptacles for radium which will allow its use in many more conditions than have hitherto been possible with the comparatively bulky capsules in use. By this means radium salts can compete with the emanations in the only point in which the latter have been superior to date.

Feb. 14, 1920, **28**, No. 13

*Inaugural Lecture of Parasitology Course. E. Brumpt.—p. 121.
Efficacy of Sodium Taurocholate as Local Preventive of Gonorrhea. L. Cheinisse.—p. 127.

Parasitology.—In the course of this inaugural lecture, Brumpt remarks that although the most common species of our parasites were known to the ancient Egyptians, yet there is nothing to show that the forbidding of the eating of pork by certain religions had anything to do with the danger of disease therefrom. He cites S. Reinach to the effect that nowhere in the Bible is there any reference to disease attributed to food, and that the idea of hygiene was born in Grecian civilization. The Abyssinians to this day, Brumpt says, do not eat pork or elephant meat, but they eat beef raw. He asked an Abyssinian chief the reason for this and for circumcision, and the reply was that both were done because their ancestors had taught them to do so, and because the mutilations "distinguished them from other people who, keeping as God made them, were like animals." Brumpt thinks that this, and not hygiene, is the key to the problem. In parasitology, as well as in surgery, Paré was a pioneer, with his advice to boil meat. F. Redi, in the seventeenth century, showed the origin of maggots from flies and of itch from an acarus, but the medicine of that day paid no heed to their discoveries.

Schweizerische medizinische Wochenschrift, Basel

Feb. 5, 1920, **50**, No. 6

*Revision in Workmen's Compensation. F. de Quervain.—p. 101.
*The Leukocyte Blood Picture in the Mountains. E. Ruppanner.—p. 105.
*The South Wind and Pathology. K. Helly.—p. 108.
*Fatal Infection with Mouse Typhus. H. Staub.—p. 114.

Revision of Workmen's Compensation.—The Swiss law provides for a pension allowing revision during the first three years and again at the end of the sixth and the ninth years. De Quervain discusses the workings of the law in concrete examples. Among 94 cases of traumatic arthritis reexamined later, 38.9 per cent. of the supposedly disabled had regained their earning capacity; the figure was 55.8 per cent. among those cases dating from 1906 and 1907. On the other hand, in 4.2 per cent. of the reexamined, arthritis had developed as a tardy complication of the trauma.

The Leukocyte Picture in the Mountains.—Ruppanner's investigation of 100 healthy persons showed a special leukocyte picture in the Engadine and at still higher levels (1,750 meters and 2,250 meters). The total number of leukocytes was normal or below, keeping at the lowest range of normal, as a rule, while the number of lymphocytes was above the normal figure, and of neutrophils was below. The proportion of mononuclears was somewhat above normal. His research demonstrated further that persons coming to the mountains generally displayed a pronounced leukocytosis at first—an acclimatation leukocytosis, as it were, which yielded in about six weeks to the mountain leukocyte picture as above. He remarks on the scanty literature on the leukocyte picture at high altitudes when so much has been written on the erythrocytes and hemoglobin changes.

The South Wind and Pathology.—Helly has been impressed with the wave of pathologic conditions which often pre-

cedes and accompanies a period of strong southerly winds. The number of deaths is higher, especially among persons with damaged hearts, and in those of unstable constitution, the thymicolymphatic status, as evidenced in the increased number of deaths under anesthetics, from myasthenia or in various diseases, the weather evidently depressing the resisting forces. The number of suicides also increases, and the number of accidents. The muscular, nervous and mental systems seem to be depressed, their vitality lowered, and physicians and surgeons should bear this in mind during the periods of strong southerly winds. Helly refers to the southerly wind called the sirocco in Italy and the föhn in Switzerland, and says that for fifteen years he has been studying its influence on the morbidity and mortality of the most varied classes of people and over a broad range of latitude, from Naples to Berlin, and found the evidences of its influence both in the living and at necropsies. Many persons feel the influence two or three days before the sirocco arrives, and are depressed and irritable.

Fatal Case of Mouse Typhus.—The previously healthy man of 62 ate five pieces of potato which had been spread with mouse virus to kill mice in the barn, made with *Bacillus typhi-murium*. He developed a fulminating infection which proved fatal in five days. There was no fever at any time, but the course corresponded to the cholera-resembling form of paratyphoid B.

Feb. 12, 1920, **50**, No. 7

Supracondyloid Fracture of Humerus. H. Iselin.—p. 121.
*Acute Aortitis with Two Aneurysms. F. Merke.—p. 122.
Volvulus. A. Walker.—p. 126.
Blood in Sputum. S. Pollag.—p. 127.
Typhoid Epidemic in 1884. C. Kaufmann.—p. 127.

Aneurysms with Acute Aortitis.—There were two aneurysms, and the aorta ruptured in the case reported in a man of 57 with chronic cystitis. The bacteriemia had induced phlegmonous aortitis. In Stumpf's similar case there was a verrucous endo-aortitis. In both cases the aortitis was evidently of metastatic origin, from the focus in the bladder.

Annali di Clinica Medica, Palermo

October, 1919, **9**, No. 4

*The Thyroid and Infections. M. Barbàra.—p. 1.
*Treatment of Pulmonary Tuberculosis. A. Fagiuolo.—p. 21.
*Elimination and Retention of Urea in Nephritis. A. Venza.—p. 66.
*Experimental Conjunctivitis. F. P. Borello.—p. 85.
*Blue Disease. M. Lombardo.—p. 113.
*Mediastinal Tumors. V. Piazza-Martini.—p. 136.
Quinin Prophylaxis of Malaria. A. Pitini.—p. 173.
*Phenol-Lipoids in Therapeutics. V. C. Piazza.—p. 183.
Pleural Effusion with Heart Disease. M. Lombardo.—p. 190.

The Thyroid and Infections.—Barbàra ascribes an important rôle to the thyroid in the struggle against infection. His experiments showed that after thyroidectomy some of the factors in immunization notably declined, including the complement, bacteriolysins, opsonic power and phagocytosis, but no modification in the antitoxin content could be detected after thyroidectomy. This lowering of the defensive forces rendered the thyroidectomized animals more susceptible to infections. The changes in the thyroid with acute and chronic infection readily explain certain symptoms observed in infections. The clinic and experimental pathologic physiology thus supplement and confirm each other. This opens a field for research on the effect of thyroid treatment on the serologic and cellular defensive forces in the course of infections.

Treatment of Pulmonary Tuberculosis.—Among the other measures applied at the Ferrarotto public sanatorium, artificial pneumothorax was induced in 56 patients and all were improved except 5 in whom conditions remained stationary, and 5 others in whom the disease progressed; 5 may be considered clinically cured and 15 immeasurably improved. In a previous series of 15 cases in which the course was concluded by 1912, all are in good condition still with the exception of 3; the marked improvement in these had persisted for two years, but their symptoms returned and 2 have died.

Elimination and Retention of Urea.—Among the points brought out by Venza in this study of the present status of this subject, is that he often found patches of apparently normal tissue in kidneys which at first glance seemed to be totally pathologic. Sometimes these normal areas gave evidence of compensative hypertrophy. He tried to estimate this reserve capacity of the kidney by comparing the urea content of the urine before and after test ingestion of 20 gm. of urea. The increase ranged from 1 to 18 gm. but the findings did not correspond to the known condition of the kidneys. Those showing the largest increase were not those with the mildest kidney disease, and repetition of the test gave variable findings. He emphasizes further that little reliance can be placed on the concentration of the urine from day to day. The maximal concentration is said to be more instructive, that is, the highest concentration in which the special substance can be eliminated. This is determined from the total urine for three or four days. It is said to be peculiar to the individual and constant in him. But in Venza's cases this maximal concentration was not constant. It seemed as if the urea had acquired a threshold below which its elimination was impossible. The kidneys seemed to be unable to respond to slight stimuli; only powerful ones affected them, and not always proportionately to the stimulus. This may be the reason why the Ambard ureosecretory constant is not always a reliable guide. The authorities even differ as to the normal standard, Ambard changing his early figure of 0.040 to a range from 0.065 to 0.070, and Weill accepts a range from 0.063 to 0.080 and, in the elderly, from 0.097 to 0.1. Raimoldi states that the normal limit is 0.080. In Venza's cases the constant was always above normal but not often proportionally to the severity of the disease, and it varied from time to time. In one patient it was 0.5 on two occasions and then 0.146, and in another 0.875, 0.633 and finally, as death approached, 0.328. The azotemia kept constantly high throughout, and the urea content of the urine did not change enough to justify this change in the Ambard constant. The azotemia in all his cases was constantly above 0.5 per thousand. An increase in the azotemia as edema subsides is always a grave sign, as the kidneys are unable to eliminate the urea which the edema fluid had been holding in solution. An increase in the azotemia as edema is forming shows the hampering of kidney function by the mechanical obstacle of the edema. The urea content of the blood with edema is therefore instructive, but only when the dilution is known. A few days of a diet to get rid of chlorids insure much greater precision. Five patients with azotemia above 2 or 3 per thousand soon died, and one with 1.70 per thousand did not survive more than a few months.

Factitious Conjunctivitis.—Borrello induced conjunctivitis in rabbits' eyes with castor-oil seeds and then obtained positive responses with an antiricin serum, with a diagnostic ricin collyrium, and with the deviation of complement test. With the latter it is a simple matter to detect factitious conjunctivitis induced with the seeds in man. The findings are illustrated.

Blue Disease.—Lombardo gives four pages of bibliography and the details of two cases in a man of 31 and a youth of 15.

Mediastinal Tumors.—Piazza-Martini reports twenty cases of mediastinal tumors causing unusual clinical manifestations. In some cases a frequent paroxysmal cough was the only symptom; it was worse on reclining, which suggested a movable tumor. In one case the symptoms indicated a tumor in the anterior mediastinum and it retrogressed in thirty-five days under sodium iodid, and all traces of it had disappeared by another month. There had been no need to apply the Wassermann test or radioscopy as improvement was so promptly evident under the specific treatment. In one case the tumor causing the cough was discovered when the reclining patient was drinking. The swallowing movements brought an accessory and enlarged thyroid, close to the isthmus, into view. It retrogressed to a clinical cure under iodids and there was no further coughing in any position. Paralysis of one vocal cord was the only symptom in one case from a clump of enlarged peribronchial glands. One woman of 50 developed symptoms testifying to compression of the azygos where it entered the vena cava, with dysphagia from engorgement of glands in the right posterior medias-

tinum. Under large doses of sodium iodid the symptoms rapidly retrogressed, although there was nothing to suggest syphilis. Emphysema, acute catarrhal bronchitis, or compression of the descending vena cava were the only symptoms in some other cases. No operation seems to have been attempted in any of the cases. All proved fatal except the few mentioned above.

Phenol Lipoids.—Piazza's experiments in chemotherapy have resulted, he says, in demonstrating peculiar properties in a combination of phenol and various lipoids, differing from the properties of either alone, and differing further according as the lipoids were derived from egg yolk, brain tissue, cholesterin or lecithin, and with or without addition of camphor. Addition of 2 gm. of the phenol-cholesterin-camphor combination to 10 c.c. of tetanus toxin annulled the toxicity so that guinea-pigs bore without harm five times the lethal dose of the tetanus toxin thus treated. The bactericidal action was most pronounced with the Shiga dysentery bacillus, and least with the pneumococcus and streptococcus. No irritating nor analgesic action on the skin or mucosa could be discovered, even with prolonged contact.

Annali d'Igiene, Rome

November, 1919, **29**, No. 11

Autovaccines in Treatment of Disease from Filtrable Virus. D. De Blasi.—p. 717.
Production of Secondary Hemolysins in Rabbits Inoculated with Ricin. D. De Blasi.—p. 727.
Action of Phenol on Rabies Virus. V. Puntoni.—p. 730.
*Prophylaxis of Malaria. M. Rizzi.—p. 748.
*Infectious Abortion in Horses. M. Carpano.—p. 752.

Municipal Prophylaxis of Malaria.—Rizzi relates experiences in Italy which demonstrated the advantages of keeping the domestic animals between the dwelling places and the pools or marshes that breed the mosquitoes, when it is impossible to keep the pools thoroughly oiled to destroy the larvae. At Trinitapoli, where malaria has long been prevalent, the stables and barnyards were removed outside the city limits and on the side toward the marshes. The stables swarmed with mosquitoes, and as they were killed off day by day, new hosts arrived, but the city escaped. No mosquitoes entered the city, and no new malaria cases developed, although the endemic was severe in the country around. The barns for the animals attract and collect the mosquitoes, and they can be destroyed readily while collected here, repeated attacks on them keeping the hosts under control. Roubaud in Paris has also recently called attention to this means of segregating the mosquitoes.

Infectious Abortion in Horses.—Carpano has isolated a bacterium of the paratyphoid group from mares with this disease and from the polyarthritis of the colts born from these mothers. It was frequently associated with a streptococcus, and he has reproduced with it a fatal disease in rabbits, guinea-pigs and dogs. It responds to agglutination tests. Characteristic cultures of both are shown in two plates.

Archivio Italiano di Chirurgia, Bologna

August, 1919, **1**, No. 1

Latent and Atypical Tetanus from War Wounds. M. Donati.—p. 1.
Tardy Slow Tetanus After Preventive Antiserum. A. Biancheri.—p. 15.
*Serotherapy of Gas Gangrene. G. M. Fasiani.—p. 35.
*Tuberculosis in Remaining Kidney. G. G. Forni.—p. 85.

Antiserum for Gas Gangrene.—Fasiani discusses the preparation and the action of immune serums against the anaerobes responsible for experimental gas gangrene.

Tuberculosis in Single Kidney.—Forni induced a tuberculous process in both kidneys and then removed one the fifteenth day in four guinea-pigs and slaughtered the animals the thirtieth day. The same procedure was applied to a series of eight rabbits. In a third series the interval before nephrectomy was two months and before killing three months. Some colored plates accompany the article. The data presented confirm the favorable effect on a tuberculous kidney of removal of its mate. The remaining kidney hypertrophies and it becomes functionally more capable. In animals, at least, the tuberculous process is retarded and modified by processes of sclerosis which tend toward healing and to recovery.

Gazzetta degli Ospedali e delle Cliniche, Milan

Nov. 13, 1919, **40**, No. 91

*Lavage of Spinal Cavity in Epidemic Meningitis. C. B. Farmachidis. p. 988.

Rinsing Out the Spinal Cavity in Meningitis.—Farmachidis emphasizes the benefit in a case in which he rinsed out the spinal cavity with a 7.5 per thousand physiologic solution, using up to 360 c.c. at each sitting, and keeping this up daily for twenty-five days. He first withdrew 30 c.c. of the spinal fluid and then injected the same amount of the physiologic solution. After a minute or two this was then gently aspirated or allowed to flow out, and 30 c.c. were injected again, repeating this ten or twelve times at a sitting, thoroughly rinsing out the cerebrospinal canal, the fluid finally coming away clear. The procedure is not painful, but injection of antimeningococcus serum causes some pain. By the second application in the case described the fever disappeared, and the young man became conscious, while the procedure seemed harmless. The cerebrospinal fluid was clear by the twenty-third day. Aubertin reported in 1915 having treated fifty men with three injections of 50 c.c. of the antiserum, preceded by rinsing with a total of 150 c.c. of physiologic solution, and a cure followed.

Policlinico, Rome

January, 1920, **27**, Surgical Section No. **1**

*Solid Hard Ovarian Tumor. E. Bussa-Lay.—p. 1.
Healing of Pseudotuberculous Peritonitis After War Wounds of Chest and Abdomen. G. Egidi.—p. 8.
*Ether in Surgical Infections. G. Fantozzi.—p. 19. Contn.

Solid Ovarian Tumor.—The large tumor described by Bussa-Lay was so hard from infiltration with lime salts that knife and saw made scarcely any impression on it.

Ether in Surgical Infections.—In this instalment of Fantozzi's long report of research on this subject, he describes the results of flushing the peritoneal cavity of rabbits, guinea-pigs and dogs with ether, according to Morestin's technic, after inducing peritonitis. Other experimental work showed that ether has only very weak antiseptic properties. His experiences on the whole warn decidedly against the use of ether for rinsing out the diseased abdominal cavity. One special drawback is the intense cold which it induces. In abdominal operations it is one of the cardinal indications to keep the viscera warm. In some of the animals, even small amounts of ether induced hemorrhagic lesions in the viscera and degenerative changes in the kidneys, besides the active hemolytic property of the ether. When poured into the peritoneum and its evaporation prevented, all the animals died from shock. When the abdomen was left freely open, so the ether fumes and any excess of fluid could escape, two of the seven rabbits (15 to 50 c.c. ether) died, and two of the three guinea-pigs (20 to 30 c.c.). Only one survived of seven guinea-pigs given intraperitoneal injection of from 0.5 to 1 c.c. of ether, and four of seven rabbits. The guinea-pigs died in a few minutes, the rabbits not until the fifth and eighteenth days. The volatilized ether evidently paralyzed the respiration by reflex action from pressure on the diaphragm. Normal rabbits bore the ether with comparatively little disturbance. The report of his clinical experiences will form the next instalment of his article.

Riforma Medica, Naples

Jan. 10, 1920, **36**, No. 2

*The "War Big Belly". C. Guarini.—p. 30.
Surgery of the Brain. C. Oliva.—p. 38.
*Appendicitis and Tuberculosis. T. Silvestri.—p. 43.
Italian Science and the Histology of the Nervous System. C. Ciaccio.—p. 44.
*Telegony. V. Diamare.—p. 48.

The "War Big Belly."—Guarini states that enteroptosis, atony and dyspepsia were responsible for the meteorism and displacement of the diaphragm in his eleven impressive cases in soldiers.

Appendicitis and Tuberculosis.—Silvestri found manifestations of tuberculosis in 45.63 per cent. of 103 persons with appendicitis.

Telegony.—Diamare recalls Paladino's demonstration of spermatozoa found buried in the immature ova of a guinea-pig, as explaining telegony.

Rivista di Clinica Pediatrica, Florence

December, 1919, **17**, No. 12

*Postdiphtheric Paralysis. L. Spolverini.—p. 617.
*Foot Phenomenon in Meningitis. A. Nizzoli.—p. 637.

Postdiphtheric Paralysis.—Spolverini queries whether the postdiphtheric flaccid condition of the muscles should properly be called paralysis, as the disturbances are more in the nature of myasthenia in the majority of cases and in four he describes here and compares with similar cases on record. In three of his cases the disturbances were arrested with antitoxin, and they retrogressed completely in from twenty to forty days. The larger the amount of antitoxin injected, the prompter the cure. In the fourth case the antitoxin had not been commenced until the twenty-seventh day, and only comparatively slight improvement was realized. These cases teach further the necessity for taking smears from the nose with postdiphtheric paralysis, as this may reveal virulent diphtheria bacilli. Some even assert that nasal diphtheria is more apt than other forms to be followed with paralysis.

The Foot Phenomenon in Meningitis.—Nizzoli cites conflicting evidence from various writers on the constancy and significance of the various signs of meningitis in children, of which he enumerates a long list. The excitability of the nervous system in children causes a host of symptoms which obscure the diagnosis. The signs which depend on reflex action are the most instructive in children, as they cannot fight against them. In two cases of tuberculous meningitis he noted dorsal flexion of the big toe and a fanlike spreading of the other toes when he tried to induce the identical contralateral reflex. The other leg became spontaneously flexed, and the toes assumed the position mentioned above. The reflex is induced on the recumbent child, with legs extended, by flexing one on the thigh and on the pelvis, with moderate compression, watching the behavior of the other leg. This foot phenomenon could never be elicited in healthy children, but could be induced at will in both these meningitic children. In others with the disease more advanced the response was negative, confirming that the phenomenon is an earlier sign.

January, 1920, **18**, No. 1

*Progressive Muscular Atrophy. G. Fiore and G. Guidi.—p. 1.

Progressive Muscular Atrophy in Children.—Fiore and Guidi give nearly four pages of bibliography on progressive muscular atrophy or dystrophy of muscles, and two colored plates of the findings in one of their three cases in infants. The latter died from pneumonia at the fifth, seventh, or fourteenth month. The muscular atrophy had been noticed soon after birth, and displayed a rapidly progressive course, with lax paralysis. The children seemed otherwise normal. Two had the same parents; they were born about four years apart, and two other children in the family were said to have shown symptoms resembling these. Two other children in the family are normal and in good health. The pathologic anatomic findings in the third case demonstrate the existence of an intermediate form between the idiopathic and the spinal muscular atrophy type.

Rivista Critica di Clinica Medica, Florence

Dec. 13, 1919, **20**, No. 50

Scleroderma with Sclerodactylia; Two Cases. C. Capezzuoli.—p. 589. Conc'n.

Dec. 20, 1919, **20**, No. 51

*Echinococcus Intradermal Reaction. A. Testi and C. Zoli.—p. 601.

Echinococcus Intradermal Reaction. — Testi and Zoli announce that when this intradermal test is negative, exploratory puncture is justified. But it should never be done when this test elicits a positive response, and this is the rule in echinococcus disease. The exceptions are rare. The test is made by inoculating one arm with 0.5 c.c. of fluid from an echinococcus cyst on a guinea-pig or beef, drawn less than twenty-four hours before. A control inoculation is made with physiologic saline on the other arm. Long series of tests on other patients and on the healthy failed to elicit the slightest response, but in thirty patients with echinococcus disease the local reaction was unmistakable in both adults and children. In one child the test was negative until cyst fluid from a sheep was used. This elicited a typical reaction. The absence of the local reaction is a sign that either there is no echinococcus disease, or else that the products of the cocci have not sensitized the organism. In either event exploratory puncture is harmless. On the other hand, a positive reaction indicates a phase of sensitization in which exploratory puncture is liable to induce symptoms of serious anaphylaxis. In some cases a positive reaction could be elicited even years after operative cure of the cyst.

Anales de la Facultad de Medicina, Lima

September-October, 1919, **2**, No. 11

*Tuberculous Pneumonia. M. Gonzalez Olaechea.—p. 81.
History of Yellow Fever in Peru. J. Arce.—p. 86. Cont'n.
Sudden Death. F. Quesada L.—p. 113. To be cont'd.
*Indigo in Ancient Peru. M. A. Velasquez and A. Maldonado.—p. 134.
Normal and Pathologic Language. L. D. Espejo.—p. 144. Cont'n.
*Peruvian Pseudomeloidae. E. Escomel.—p. 160.
The Anatomists of Peru. H. Valdizan.—p. 164.

Tuberculous Pneumonia.—Gonzalez reports a typical case of what he assumed to be chronic pneumonia of the fibroid hyperplasia type, for which attenuated tuberculous infection was probably responsible. The symptoms were those of lobar pneumonia, but there was a history of moderate hemoptysis twenty-five years before, with no other symptoms of tuberculous infection. The tubercle bacilli are seldom to be found in the sputum in such cases, but tuberculin-iodid treatment, begun the thirtieth day in his case, induced specific reactions, brought down the fever, the symptoms subsided, and the man of 54 has felt perfectly well during the four months since he left the hospital apparently cured by the tuberculin stimulating the production of antibodies.

Indigo in Ancient Peru.—Velasquez and Maldonado review the history of the use of indigo in America, many textiles, etc., dyed with indigo having been found in tombs from pre-Columbian days. They give an illustration of part of a garment dating from the Inca period, decorated with indelible blue figures.

The Pseudobeetles of Peru.—Escomel adds another to the list of eight pseudomeloidae which have been described in Peru, five first by him. The blood of these insects seems to have been used from time immemorial to cure warts. The papilloma becomes blanched and looks as if it has been cauterized with a strong acid. The active principle has been identified with cantharidin.

November-December, 1919, **2**, No. 12

Early History of Lima Medical School. H. Valdizan.—p. 244.
*Study of Maize and Chicha Liquor Made Therefrom. M. A. Velasquez and A. Maldonado.—p. 268. Conc'n.

Maize and Chicha.—This latter term is the name of the common alcoholic beverage long made from corn in Peru, and Velasquez and Maldonado give an illustrated description of its production from prehistoric days to date. They also review the history of maize, giving a bibliography of 139 works.

Anales de la Facultad de Medicina, Montevideo

December, 1919, **4**, No. 12

*Influenza, Suprarenal Insufficiency and Manic-Depressive Psychoses. S. C. Rossi.—p. 801.
*Gallbladders with Partitions and Gallstones. D. Prat.—p. 813.
Classification of Motor Disturbances: Hyperkinesia. A. Ricaldoni. —p. 842.

Suprarenal Insufficiency as Factor in Psychoses.—Rossi has encountered nine cases in which a manic-depressive psychosis developed during the weakness following influenza. He ascribes it to the suprarenal insufficiency which was manifest. This assumption was confirmed by evidences of suprarenal insufficiency in six other patients with manic-depressive

psychoses who had not had influenza. It was placed on a still more solid basis by the efficacy of suprarenal treatment. The beneficial action of epinephrin in these cases seems to lift the veil of mystery from the manic-depressive psychoses, and expose their origin and means to treat them.

Partitions in Gallbladders.—In one of the cases illustrated, constriction of the walls of the gallbladder, at about the lower third, had imprisoned a large gallstone; in another case two were imprisoned by an hour-glass constriction. In others the gallstones were lodged in a diverticulum, or a fibrous septum had walled off part of the gallbladder and with it a stone. In one case the gallbladder had bent double, shutting off communication between the two halves. This partitioning off of the gallbladder may be of inflammatory origin, or from deformity from the weight of stones, or from a tumor nearby, or from some mechanical valve formation. If we bear the possibility of such anomalies in mind, we will not waste so much time waiting for spontaneous expulsion of the calculi which is absolutely impossible in these conditions.

Amazonas Medico, Manáos

July-September, 1919, **2**, No. 7

*Rhodnius Brethesi n. sp. A. Da Matta.—p. 93 and p. 104.
Influenza in Northern Brazil. G. Victor.—p. 95.
Urethroscopy in Men. F. Costa Fernandes.—p. 98.
Posthumous Testimony to Validate a Will. J. F. De Araujo Lima.—p. 107.
J. Barbosa Rodrigues, the Botanist. A. Da Matta.—p. 137.

Insect Host of South American Trypanosome.—Da Matta has been studying the life history of a beetle which he has named *Rhodnius brethesi* and which is an intermediate host for Chagas' trypanosome. It is found in the Amazon region where both the trypanosomes and the animal ancestral host for the latter, the armadillo, are encountered. The trypanosome does not seem to cause disease in the latter, and Chagas' disease has never been known in human beings in that region to date.

Boletín de Medicina y Cirugía, Guayaquil

December, 1919, **17**, No. 127

*Etiology of Yellow Fever. VI to VIII. H. Noguchi.—p. 165.

Yellow Fever.—The *Boletin* here continues its translation into Spanish of Noguchi's various publications on this subject. The fine plates and tabulations showing the results of experimental research on *Leptospira icteroides* are reproduced.

Brazil-Medico, Rio de Janeiro

Nov. 22, 1919, **33**, No. 47

Colloidal Gold in Treatment of Varicose Ulcers. Ataliba Sampaio.—p. 369.

No. 29, 1919, **33**, No. 48

*Transmission of Disease by the Fly. L. Rocha.—p. 377.

Flies in Transmission of Disease.—Rocha appeals for a national campaign against flies, and says that Paré in 1575 attributed to flies a certain rôle in the propagation of the plague.

Dec. 20, 1919, **33**, No. 51

*The Fixation Test in Diagnosis of Mycetoma or Madura Foot. A. L. B. Barreto and C. Burle Figueiredo.—p. 403.
Foreign Body in Rectum. A. A. de Carvalho.—p. 404.
*False Angina Pectoris. Athayde Pereira.—p. 405.

Dec. 27, 1919, **33**, No. 52

Mechanism of Death After Experimental Vagotomy. M. Ozorio de Almeida.—p. 411.
Epidemic Poliomyelitis in Uruguay. V. Escardo y Anaya.—p. 412. Conc'n.

Serologic Test for Mycetoma.—The deviation of complement test was positive in the case of mycetoma or Madura foot described. The antigens used were emulsions of *Endomyces brasiliensis* and of *Discomyces bahiensis*, which happened to be on hand.

False Angina Pectoris.—Athayde describes a case of liver colic with spasm of the stomach which simulated the clinical picture of angina pectoris in the man of 43. Under measures to tide the cholelithiasis into a latent phase, the recurring false angina pectoris permanently subsided.

Crónica Médica, Lima, Peru

November, 1919, **36**, No. 677

*Case of Ainhum. O. Soto and J. L. Raffo.—p. 373.
Electrocardiographic Diagnosis of Extrasystoles. M. A. Schreiber.—p. 378.
Rupture of Membranous Urethra. E. P. Manchego.—p. 381.
*The Tuberculin Reaction in Blastomycosis. S. Lozada Benavente.—p. 389.
Dystocia from Defective Development of Lower Segment of Uterus. E. A. Boero.—p. 390.
The Progress of Medicine in Spain. C. Maturana Vargas.—p. 395.

Ainhum.—Soto and Raffo report the first case of ainhum to be published in Peru, but the patient tells of other cases in his environment.

The Tuberculin Reaction in Blastomycosis.—Lozada found the intradermal tuberculin reaction constantly positive in his fifteen cases of blastomycosis. Two of these patients died from influenza, but necropsy failed to reveal the anticipated tuberculous lesions. It seems as if the positive reaction must have been the work of the blastomycosis.

Plus-Ultra, Madrid

September-October, 1919, **3**, No. 15-16

*Technic for Suturing the Intestine. A. Perera.—p. 125.
Recent Progress in Bacteriology.—p. 131; Therapeutics.—p. 141; Otolaryngology.—p. 148; Instruments.—p. 154; Pediatrics.—p. 160; Obstetrics and Gynecology.—p. 162; Heart Disease.—p. 174.
Operative Treatment of Traumatic Radial Paralysis. M. Bastos.—p. 135.
Treatment of Disease of Lacrimal Apparatus. Barraquer.—p. 147.
*Hyperthyroidism and Pseudohysteria. C. Juarros.—p. 152.
*Lipomatosis of the Kidney. M. Serés.—p. 168.
The Thermal Springs of Spain. H. Rodriguez Pinilla.—p. 171.
Epidemic Meningitis. C. Garcia Luquero.—p. 177.
Recent Surgery of the Digestive Apparatus. L. Urrutia.—p. 179.
Scientific Care of the Insane. H. F. Delgado.—p. 185.
Anomaly of the Kidney. Garcia Urdiales.—p. 190.
*Glycogen in the Auriculoventricular System. P. Rojas.—p. 192.

Technic for Suturing the Intestine.—Perera presents thirty-nine illustrations of the various steps of suturing a perforation and of anastomosis, with comment based on his personal series of fifty-eight cases.

Hyperthyroidism and Pseudohysteria.—Juarros declares that every day he encounters more and more persons whose disturbances have been ascribed to hysteria with the consequent therapeutic indifference, when in reality closer study of the case reveals excessive functioning of the thyroid as a factor. This hyperthyroidism can be easily cured or at least much attenuated, he continues, when the thyroid symptoms are discovered, tremor, sweating and mononucleosis, besides the usual triad of tachycardia, palpitations and the ocular signs. The tremor is rendered evident by having the patient extend his arms and hands, spreading the fingers. A sheet of paper laid on the hand renders plainly manifest any tendency to tremor. Hysteria can be excluded by the mentality, the hysteric character being easily recognized, so that, he says, "there is no excuse for labeling as hysteria every feminine neurotic manifestation." The instability of the thyroid may induce attacks of hyperthyroidism which may simulate in every respect the phases of a neurosis with the arthritic constitution. The excessive thyroid functioning may even entail obsessions, phobias, hallucinations and delirium, still further confusing the diagnosis. He has recently seen a case with the set of symptoms described by Block in 1912, and it yielded to antithyroid treatment. The patients in this category are usually old maids, and pigmentation is a characteristic symptom, most marked in the muscles, cheeks and side of the brow. They are self-centered, melancholy and irritable, complain of fatigue and insomnia, and are doomed to suffer incurably so long as hysteria is regarded as responsible. A prompt cure in all these hyperthyroid cases may usually be realized under antithyroid plus ovarian treatment, with calcium salts and sodium cacodylate as adjuvants. The main thing is to give adequate doses and persevere long enough.

Renal Lipomatosis.—Serés' patient was a woman of 26; during convalescence from influenza constant pain developed in the left kidney and the urine was turbid, but there were no other signs suggesting a tuberculous process. The pains grew so severe that the kidney was removed, and it was

found full of fat, the soft yellow fat having taken the place of the true kidney tissue, only a narrow shell of the latter being left. In the three analogous cases on record the patients soon died, as also Serés' patient but in none was the kidney process directly responsible for the death. Serés' patient succumbed to pleurisy a month after the operation.

Glycogen in Auriculoventricular Conducting System.—Rojas reports as the results of extensive microscopic and chemical research on the impulse-conducting system of the heart, that there seems to be a larger proportion of glycogen in the tissues here than elsewhere.

Revista de Gyn., d'Obstet. e de Pediat., Rio de Janeiro

September, 1919, **13**, No. 9

*Vesicovaginal Fistulas. H. F. Werneck.—p. 263.
Gravity of Otitis in Infants. N. Gurgel.—p. 313. Conc'n in No. 10, p. 367.

October, 1919, **13**, No. 10

Uterine Cancer: Diagnosis and Treatment. A. Monjardino (Lisbon). —p. 321.
Hysterectomy from the Social Standpoint. Idem.—p. 342.
Organization of Maternities. Idem.—p. 355.

Genito-Urinary Fistulas.—Werneck had five women with these fistulas in his service during a recent two months. He describes the various operative measures applied, and compares them with others in the literature, giving thirty-one illustrations. In some of his cases labor had lasted from three to eight days; in one of these a calculus in the bladder had been a factor, and a pessary in others. In conclusion he says to emulate Sims' pertinacity, and keep on operating anew, undaunted by apparent failures, until finally the fistula is conquered.

Revista Medico-Cirurgica do Brazil, Rio de Janeiro

September, 1920, **27**, No. 9

*Fulminating Otogenous Meningitis. F. Eiras.—p. 319.

Fulminating Otogenous Meningitis.—Eiras' 14 cases confirm the frequency of meningitis from this cause, and the danger of its nonrecognition. In one case a physician had been unjustly arraigned, and the day he should have appeared in court he died suddenly. No one knew he was sick, but necropsy revealed meningitis from catarrhal otitis. The course of the meningitis had been so fulminating that the death had been ascribed to suicide. In the 3 fatal cases in Eiras' practice, 2 of the patients had changed doctors because he had insisted on an operation, and the third consented to intervention only when practically moribund. Two of the 6 successful operative cases were in infants of 4 and 11 months. In one young adult the meningitis was consecutive to gonococcemic otitis, mastoiditis and arthritis of the temporomaxillary articulation, and the operative measures were supplemented with vaccine therapy according to Wright's method. A cure was realized without operation in 5 cases, draining the suppurating otitis media and rinsing with hydrogen dioxid once or twice a day; these were all children but one. The otitis had developed during convalescence from influenza in 3 of them. Even a simple catarrhal otitis is liable to set up meningitis. There had been no pus in the discharge from the ear in one of his cases, but the operation disclosed a large collection of pus. This frequent finding sustains the theory that otitis media is not always due to invasion from the nasopharynx but may be a local explosion from a general infection. This mechanism was evident in his gonococcemia case; there was no suppuration in the middle ear, but it contained the gonococcus. The mastoid antrum should be opened up at the slightest suspicion of involvement of the brain. We must remember, he says, that the most treacherous cases may show very few symptoms, and that an exploratory operation here is the most harmless of all surgical ventures. During the 1917 epidemic of acute otitis media he often encountered 2 or 3 or even 6 cases in one home.

Revista de Medicina y Cirugía, Havana

Nov. 25, 1919, **24**, No. 22

*Treatment of Trachoma. R. Guiral.—p. 535.
*Treatment of Glaucoma. R. Guiral.—p. 537.

Dec. 25, 1919, **24**, No. 24

Twin Pregnancy with Placenta Praevia, etc. L. Huguet.—p. 569.
Paratyphoid plus Colon Bacillus Fever. M. A. de Villiers.—p. 572.

Brush Treatment of Trachoma.—Guiral has applied with good results Howley's aspirating cannula for treatment of trachoma but this does not scrape off the sago-like elevations so perfectly as a dentist's circular brush run by an electric motor. The small, narrow, rapidly revolving brush sweeps off the granulations without the slightest harm to the mucosa. The surgeon thus realizes more than he can ever obtain with the vacuum cannula or other means, he says, while the conjunctiva is left as smooth and clean as if there had been no granular disease. He applies it under ether, and compresses the lid at the operation to expel the blood somewhat. After thus sweeping the conjunctiva clean, he applies the vacuum cannula to aspirate all secretions, blood, etc. Several stereoscopic views accompany the article.

Glaucoma.—Guiral describes the technic for Elliot's method of treating glaucoma, and declares that it is superior for all forms of glaucoma. He has recently had to apply it to six young persons under 20, all belonging to two families in which the parents and grandparents had required treatment for acute glaucoma. The young people had simple glaucoma; the rapid decline of vision was arrested by the Elliot operation, and vision is now excellent.

Mitteilungen aus der Med. Fak. der Univ. zu Tokyo

March 28, 1919, **21**, No. 2, German Edition

*Colloidal Gold Reaction in Body Fluids. H. Iida and S. Tominaga. —p. 217.
*Banti's Disease. T. Mitamura.—p. 245.

Colloidal Gold Test of Body Fluids.—Iida and Tominaga have been studying the colloidal gold reaction in the cerebrospinal fluid, in effusions and exudates and in urine, milk and bile, and its relations with the Wassermann, Nonne and other reactions, in health and in pathologic conditions. Their charts and the tabulated comparative findings in fifty-one cases show parallel reactions as a rule with the first phase of the Nonne reaction and pleocytosis, but the colloidal gold reaction was sometimes negative when the Wassermann was positive, and vice versa. Scarcely any of the exudates induced the maximum precipitation below a dilution of 1:10,240, but with transudates the range was wider. The reaction indicates that there are three kinds of transudates. With one the maximum of precipitation is between 1:10 and 1:320; with the second kind, between 1:940 and 1:1,280, and with the third, at 1:2,560. No difference between the urine from sound and diseased kidneys could be detected. Precipitation occurred with human milk, blister fluid and bile. They warn that in preparing the colloidal gold, the vessel must not be covered, as retention of the gas generated interferes with the reaction later. They specify a few other minor points in the technic.

Revision of Banti's Disease.—Mitamura presents evidence that the spleen in true Banti's disease shows fibroid degeneration of spleen tissue while the liver may in time develop cirrhosis or atrophy, but it differs essentially from that with Laennec's and other forms of cirrhosis. He cites 141 articles on the subject from the literature, and gives five plates of photomicrographs of the necropsy findings in seven cases reported with minute detail. There was a history of syphilis in two, and it was suspected in a third case. He declares that the term Banti's disease should be restricted to this type of primary splenomegaly with gradually increasing simple anemia, with finally, sometimes, ascites, and in the later stages gastro-intestinal hemorrhage. Splenic anemia and Banti's disease are therefore synonymous terms, he adds. The latter is essentially much like hemolytic jaundice, especially the acquired form, although not exactly the same. Thrombosis in the portal system is mainly responsible for the late ascites in the Banti's syndrome. In Mitamura's cases the enlargement of the liver was noted under 10, under 20, or under 30 years of age in about half the cases, and this stage of splenic anemia lasted from a few years to twenty years. Then the stage of ascites without impairment of the bile

secretion lasted about a year. In the third, terminal, stage the liver was much reduced in size and bile production was diminished. This phase lasted two or three years. No operation had been attempted except in two of the cases; fatal peritonitis followed in one, and the other patient succumbed to heart weakness. The others died in time from marasmus or gastro-intestinal hemorrhage.

Berliner klinische Wochenschrift, Berlin

Nov. 24, 1919, **56**, No. 47

*Prohibition of Hypnotic Exhibitions. E. Schulte.—p. 1105.
Delivery of Milch Cows to the Entente. Rott.—p. 1108.
*The Sachs-Georgi Reaction. W. Wolffenstein.—p. 1110.
*Deep Roentgenotherapy in Leukemia. E. Rosenthal.—p. 1113.
Pectoral Fremitus in Croupous Pneumonia. Arneth.—p. 1116.
Morphology of Lymphocytes. H. Klien.—p. 1117.

Prohibition of Exhibitions of Hypnotism.—Schultze deplores that hypnotic exhibitions are becoming so frequent, as he has seen great harm result to subjects who have been hypnotized. He recites in detail the case of a young woman who after being hypnotized one evening by a traveling hypnotist presented marked mental disturbances. As she started for home, she insisted that she must go back, again and again, and at home she ran about with fixed eyes and outstretched hands, apparently insensible to her surroundings, though she recognized her friends. The hypnotist was finally sent for at a late hour, and he succeeded in quieting her. After a restless night she went to her work, but was unable to attend to her duties and had to be sent home. She felt compelled to return to the hypnotist, and complained that she could not think clearly. After a week of this, Schultze hypnotized her in presence of a colleague, and impressed on her that in future only Schultze and his assistant could hypnotize her, and that after this she would have no more trouble. She was then very slowly and cautiously brought out of the hypnotic state and in a few days had entirely recovered. He emphasizes that hypnosis cautiously applied is the best means to cure the effects of hypnotism improperly carried out. Before the war, some of the German states had laws prohibiting exhibitions of hypnotism, but they are not being enforced now. Austria and Italy have also passed laws of the kind.

The Sachs-Georgi Reaction.—Wolffenstein and his associates made comparative tests by the Sachs-Georgi and the Wassermann methods in 1,000 cases, from which, it seems, four conclusions may be drawn: 1. Even with the most careful technic, misleading results seem bound to arise on account of the seemingly unavoidable errors in preparing the solutions, and it is therefore important always to use more than one type of reaction, in order by comparing results to reduce the percentage of error to a minimum. 2. The Sachs-Georgi reaction becomes manifest in syphilis earlier and may be elicited later than the Wassermann reaction. 3. The number of unspecific Sachs-Georgi reactions is relatively high, being especially common with ulcus molle and in febrile conditions. Clinically healthy subjects may for the time being give positive Sachs-Georgi reactions. 4. The foregoing observations limit materially the usefulness of the Sachs-Georgi reaction as compared with the Wassermann reaction. A diagnosis of syphilis and conclusions as to continuing treatment can therefore not be based entirely on a positive Sachs-Georgi reaction, nor even on a series of positive reactions.

Treatment of Leukemia with Deep Roentgenotherapy.—Two years ago Rosenthal published a preliminary report of his treatment of leukemia with deep roentgenotherapy. His experience at that time had been that after only one sitting the number of leukocytes was reduced to normal in from ten to fourteen days, during which time the spleen had become much smaller. The subjective symptoms disappeared in cases in which other therapeutic methods had failed. He gives in detail the history of his oldest case: The white cell count varied from 250,000 to 300,000. Feb. 5, 1917, the patient received a deep roentgen-ray treatment. February 14 the white cell count was 30,000, and later went down still further and remained under 50,000 until the end of April, 1917. End of October the white cell count was back to 250,000 again. The patient returned and received another single treatment. The count fell by crisis to 5,000 and remained stationary for several weeks, but by June, 1918, after gradually rising, it had reached 230,000 again. A third treatment brought the count promptly down to from 5,000 to 10,000, but by January, 1919, it had again reached 230,000. After a fourth treatment the count was 20,000. The spleen decreased in size after each treatment. For five or six months after each treatment the patient felt well and was able to work, but then a slight weakness set in, with a feeling of pressure in the region of the spleen; these symptoms were promptly relieved by renewed treatment. Rosenthal's experience thus indicates that the favorable effect of a deep roentgen-ray exposure wears off in about eight months, when treatment must be renewed. He still considers this the most reliable treatment in leukemia. Severe reactions, however, do result, and he admits a mortality of 12 per cent. in 25 cases, which he considers a fair showing in view of the seriousness of the prognosis in leukemia.

Deutsche Zeitschrift für Chirurgie, Leipzig

July, 1919, **150**, No. 5-6

*Prolapse of the Rectum. E. F. Curt Heinemann.—p. 289.
Operative Treatment of Recent Fracture of Forearm. A. Szenes.—p. 333.
Intra-Abdominal Loss of Fat as Factor in Hernia and Ileus. Bode.—p. 344.
Unusual Cases of Mechanical Ileus. R. v. Wistinghausen.—p. 352.
*Arteriomesenteric Occlusion of Duodenum. F. Ranzel.—p. 361.
Hyperemia and Edema from Constricting Band. Mende.—p. 379.
Extensive Resection of Intestine for Infarct from Arterio-Embolism. H. Smidt.—p. 399.
*Etiology of Cleft Face. R. Drachter.—p. 409.
Simple Perforating Ulcer of Large Intestine. J. Dubs.—p. 415.
*Fat in Plastic Operations on Lungs. K. Stromeyer.—p. 420.

Prolapse of the Rectum.—Heinemann advocates a method of operative treatment with which he has been successful in nearly all of twenty-six exceptionally severe cases. He sutures the anus, and then through a median incision, from the anus to the coccyx, with a simicircular extension at the edge of the anus, he slits the muscles and loosens up the rectum walls. Then he passes three threads lengthwise through the rectum wall, except for the mucosa. As the threads are tied, they take up three deep transverse folds in the rectal wall. By tying the ends of the threads from each side together, a lengthwise fold is taken up also. The higher threads are fastened to the coccyx or a ligament to suspend the rectum. The levator ani muscles are then sutured, and if necessary a fold is also taken up in the sphincter.

Arteriomesenteric Duodenal Ileus.—Ranzel cites experiences which demonstrate that this form of strangulation ileus can develop without dilation of the stomach, contrary to the opinion of some. He then reports a personal case in which a much emaciated man of 28 developed the arteriomesenteric duodenal occlusion spontaneously. The symptoms came on suddenly while he was traveling, obliged to stand up, and he had been eating very little. There was no collapse, the colic-like pains being the main symptom. When he reclined, the pains were relieved. In this case and in four others on record there was bluish discoloration below the occlusion. In treatment, the knee-elbow posture should be tried, introducing the stomach tube with the head low. If these measures fail, he advises gastro-enterostomy before the debility becomes extreme, as he applied in his case, with prompt recovery.

Congenital Clefts in the Face.—The cleft in the face extended from both orbits to the mouth, the nose region forming thus a peninsula, as it were, and the umbilical cord was firmly impacted in the cleft, while an amniotic band was caught in one orbit.

Fat in Plastic Operation on Lung.—Stromeyer says that the cavity in the lung left from a war wound was large enough to hold two billiard balls, several ribs having been resected and three fistulas from the bronchi opening into it. He twisted a pedunculated flap of adipose tissue around to fill the defect, with a second flap to hold it in place. The bleeding and the coughing stopped at once, and recovery was soon complete except that the man still has to wear a corset to prevent the flapping of the lower part of the chest wall on that side.

Münchener medizinische Wochenschrift, Munich

Nov. 28, 1919, **66**, No. 48

Focal Illumination of the Eye. A. Vogt.—p. 1369.
*Separation of B. Typhosus from B. Coli. E. Friedberger.—p. 1372.
Cerebral Reactions Following Salvarsan. G. L. Dreyfus.—p. 1374.
Silver Salvarsan Sodium. J. Hoppe.—p. 1376.
Technic of Silver Salvarsan Injection. C. Stern.—p. 1377.
*Diphtheria in Wounds. Kehl.—p. 1377.
*Intrathoracic Pressure and Respiratory Mechanism. R. Drachter.—p. 1378.
*Deep Thermometry: II. B. Zondek.—p. 1379.
*Diagnosis of Tuberculous Meningitis in Children. E. Rominger.—p. 1381.

Utilization of Capillary Attraction to Differentiate Typhoid and Colon Bacilli.—Friedberger dips strips of filter paper, 1 cm. wide and 10 cm. long, for twenty seconds to the same depth in equally concentrated suspensions of typhoid and colon bacilli. After the fluid has mounted up the strips by capillary attraction, the strips are then pressed down side by side for a moment on Endo plates. As the cultures develop it is found that the typhoid bacilli have mounted higher, as a rule, than the colon bacilli. The experiment may be made with a mixture of the typhoid and colon bacilli, and the strips may be cut into pieces 1 cm. wide (as far as the fluid has climbed). If these pieces are then put in a physiologic sodium chlorid solution and cultures made on Endo plates, the colon bacillus cultures will be found almost exclusively on the lower portions of the strips. The higher on the strips, the more the cultures of *B. typhosus* predominate. He is continuing his research on this elective capillary attraction for different bacteria, and thinks that it will aid materially in differentiation of the various types.

Surgical Wound Diphtheria.—Kehl states that in order to pronounce a final diagnosis of wound diphtheria, examination of smears alone is not sufficient, as it is impossible to determine to what extent pseudodiphtheria bacilli may be mixed with the genuine bacilli. He therefore recommends that in all cases in which pole-staining bacilli are isolated, the final diagnosis should be made on the basis of animal inoculation. An accurate diagnosis is especially important in view of the fact that genuine wound diphtheria is just as infectious as pharyngeal diphtheria. Sixty wounds that looked suspicious were examined as to their *B. diphtheriae* content and found to be negative. There was one finding that seemed doubtful, but inoculation of an animal showed that the organisms were pseudodiphtheria bacilli.

Instrument for Recording Intrathoracic Pressure and the Respiratory Mechanism.—Drachter describes a syringe instrument which serves to give a clear idea of intrathoracic pressure relations under physiologic and pathologic conditions.

Deep Thermometry.—Zondek gives a series of tables illustrating the varying temperature found in different parts of the body. The temperature in the musculature of the abdominal walls and the extremities is lower than that of the rectum, but near large blood vessels the temperature of the muscles is slightly higher, although still lower than the rectal temperature. The differences are not constant, and vary in different subjects. The temperature of the tissues gradually diminishes toward the surface of the body. Each centimeter marks a difference of 0.25 C. on an average. Layers of fat are poor conductors of heat and serve as a protection in the heat economy, consequently a dry skin presents a lower subcutaneous temperature than an oily skin. If the skin is oily, there is thus a marked contrast between the epidermis and the underlying fascia. The temperature of subcutaneous tissues depends on the character of the underlying tissues, being lowest over bones. The temperature of organs, taken during operations, showed that the liver, the kidney and the uterus had temperatures between the preoperative and postoperative rectal temperatures. During the operation, the body temperature falls. The lungs have almost rectal temperature, the difference being 0.2 C. In one suppurating uterine myoma the temperature exceeded the rectal temperature, doubtless owing to acute inflammatory phenomena. In a hydrocele a surprisingly low temperature was noted.

Diagnosis of Tuberculous Meningitis in Children.—Rominger comments on the tendency to regard tuberculous meningitis as a distinct disease, whereas it is important to bear in mind that it is in reality only one aspect of general miliary tuberculosis, and that the condition of the other organs, especially the lungs, may offer valuable evidence for an early diagnosis. Although tuberculous meningitis is usually easily recognized if there are pronounced brain symptoms, yet in the beginning of the disease, as long as only dubious general nerve symptoms are present, diagnosis is often difficult. Even when meningitis is diagnosed, it is often difficult to ascertain what form of meningitis is present. Roentgenograms of the lungs should be made, and they are often valuable, especially if the lungs already show signs of miliary tubercles, but negative results do not by any means exclude tuberculous meningitis, as miliary tubercles in the lungs often develop late, sometimes only shortly before death. Lumbar puncture is instructive. The tubercle bacillus is found only in from 80 to 90 per cent. of the cases and often requires several days of patient search. Lymphocytosis can only be regarded as a possible indication. Increased pressure as shown by lumbar puncture is important, but more valuable still is evidence of an increased albumin content of the cerebrospinal fluid, for which Pándy's reaction is the most reliable and practical method. This consists in adding a drop of cerebrospinal fluid to 1 c.mm. of 7 per cent. phenol solution. Cloudiness at the zone of contact is a sign that the fluid contains easily precipitable albuminous substances in pathologic quantities. In a series of fifteen cases the Pándy reaction was positive.

Therapeutische Monatshefte, Berlin

December, 1919, **33**, No. 12

*Treatment of Gas Bacillus Infection. E. Vogt.—p. 474.

Gas Bacillus Infection.—Vogt warns that the premonitory symptoms of gas bacillus infection are intense pain and a peculiar odor of the wound, distress, and the disproportion between the findings in the wound and the general condition. Metastasis is rare, but it is favored by ischemia at any point, even remote.

Therapie der Gegenwart, Berlin

December, 1919, **60**, No. 12

*Predisposition to Accidents.. C. Widmer.—p. 441.
Potency of Extracts of Digitalis. O. A. Rösler.—p. 447.
*Treatment of Shriveling Processes in the Chest. J. Zadek.—p. 450.
Sprays in Treatment of the Eyes. E. A. Heimann.—p. 459.
Treatment of Malaria. W. Brandt.—p. 475.
*After-Treatment of Dislocation of the Hip Joint. G. Müller.—p. 479.

The Predisposition to Accidents.—Widmer argues that the inbred experience of countless ages enables us to sidestep injury unconsciously. Only when we focus our consciousness on the reaction to the occurrence is injury liable to result. By practice or by diverting the attention, the consciousness of the act becomes eliminated, and the inbred experience then carries us safely past the danger point. He refers in particular to industrial accidents.

Treatment of After-Effects of Pleurisy, etc.—Zadek gives case histories which show the remarkable benefit that can be derived from the special breathing exercises he describes in warding off and curing adhesions and many chronic pathologic conditions entailing retraction and shriveling of lungs and pleura. Inspiration is slow and deep "as if to burst one's belt"; expiration is aided with the hands applied to the chest wall below the breast, the thumb turned toward the back, the little finger on the costal arch at the nipple line, the fingers in the interspaces. There should be no active pressure from the hands. Inspiration should take about four seconds and expiration three seconds, and the exercise should be repeated from three to six times a day. Three inspirations at first are enough, but later from three to eight minutes or longer are given to the exercise. The exercise should always stop short of inducing palpitation, etc.

After Correction of Dislocation of the Hip Joint.—Müller applies a splint or other appliance after correction which relieves the hip joint of weight bearing, while at the same time it presses the head against the acetabulum. As the hip joint is used, the head bores a niche for itself. By this prophylactic treatment in all cases in which conditions seemed to invite recurrence, it has been warded off except in

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two of his hundreds of cases in the last fifteen years, and in these two there had been fracture of the neck.

Zentralblatt für Chirurgie, Leipzig

Feb. 7, 1920, **47**, No. 6

*Experimental Production of Pseudarthrosis. M. Katzenstein.—p. 122.
History of Osteochondritis of the Hip Joint: Legg-Perthes-Calvé Disease. G. Perthes.—p. 123.
Retroperitoneal Access to Deep Abscess in the Abdomen. J. Keppich.—p. 125.
Plastic Operation on Under Lid for Support of Artificial Eye. H. Teske.—p. 128.

Avoidable Cause of Pseudarthrosis.—Katzenstein relates experiences which apparently demonstrate that the capacity of the bone marrow for regeneration of bone is sufficient for the healing of a fracture but that if any periosteum tissue is in contact with the bone marrow, the regenerating capacity of the latter is modified. Instead of producing bone, only a bone-like cartilage is produced. The result is a pseudarthrosis instead of normal healing. In experiments on animals, the bones could be made to heal normally or develop pseudarthrosis at will, by preventing or allowing any contact between periosteum and bone marrow.

Zentralblatt für Gynäkologie, Leipzig

Feb. 7, 1920, **44**, No. 6

Puncture of the Uterus to Facilitate Delivery with Hydramnion. E. Wormser.—p. 137.
*The Fatalities After Sacral Anesthesia. E. Zweifel.—p. 140.
*Eclampsia and Vomiting of Pregnancy. J. Hofbauer.—p. 144.

Feb. 14, 1920, **44**, No. 7

Mechanical Dilation of the Uterine Cervix with Inflatable Bag and Weight Traction. A. Mueller.—p. 161.
Genital Hemorrhages in Cholera in Women. H. Kritzler.—p. 170.
Case of Bilateral Tubal Pregnancy. H. Brossmann.—p. 174.

Fatalities After Sacral Anesthesia.—Zweifel analyzes the ten fatalities that have been published as following sacral anesthesia, among the 4,200 cases on record in which this technic has been applied. In only three of the total ten fatal cases could the sacral anesthesia be held responsible. In these cases death followed in a few seconds, in seven minutes or in ten minutes, evidently from acute procain poisoning. In all the cases, 0.6 gm. of procain was the smallest dose used, and in some it was up to 0.9 gm. No mishaps have been recorded with doses of 0.4 or 0.5 gm.

Treatment of Eclampsia and Hyperemesis.—Hofbauer presents a number of arguments that the pituitary and suprarenal glands play an important part in the pathogenesis of pregnancy disturbances. The brain, liver, kidneys, and stomach are affected by the hormones from these two glands, and in ovarian treatment we have a means to inhibit the action of the pituitary and suprarenals on the sympathetic nervous system. By this antagonistic organotherapy he thinks we now have a specific causal means of treatment. Cases of severe hyperemesis at the second month and of eclampsia at the ninth month in two primiparas treated in this way with ovarian extract showed marked benefit. This treatment seems to paralyze the pathogenic excessive functioning of the pituitary-suprarenal system. He advises to give the ovarian extract early and freely, from the first symptoms, with sedatives, but strictly avoiding morphin and pituitary extract. He warns also against chloral for more than a single dose of 2 gm., by the rectum, saying that chloral injures the heart, and its action on the respiratory centers also calls for extreme caution. It may induce cyanosis and pulmonary edema.

Zentralblatt für innere Medizin, Leipzig

Feb. 7, 1920, **41**, No. 6

Specific Treatment and Prophylaxis of Tuberculosis in Man and Animals. A. Strubell.—p. 97.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Jan. 3, 1920, **1**, No. 1

*Medicine in Europe a Hundred Years Ago. H. T. Deelman and C. C. Delprat.—p. 1.

Medicine a Hundred Years Ago.—Three young physicians started from Holland to visit the medical centers in France and Germany in 1818. One was C. B. Tilanus, and Deelman and Delprat have compiled an account of the medicine of that day from their diaries and notebooks, particularly those kept by Tilanus. Dupuytren and Larrey at Paris seem to have shone by their kidney stone, hernia and fracture operations, but abdominal surgery was practically unknown. Only one of the mammectomies for cancer proved successful among the many they witnessed. All the other patients succumbed to infection. Only one survived of ten women operated on by Dupuytren for cancer of the cervix, and he knew of only one woman still living two years after an operation of the kind.

Hygiea, Stockholm

Jan. 31, 1920, **82**, No. 2

*The Diagnosis of Exophthalmic Goiter. A. Troell.—p. 33.
*Lumbar Puncture in Treatment of Acute Wood Alcohol Poisoning. M. Zethelius.—p. 45.

Hypersensitiveness to Epinephrin in Hyperthyroidism.—Troell gives charts showing the clinical response to subcutaneous injection of 0.5 c.c. of a 1:1,000 solution of epinephrin in six patients with manifest exophthalmic goiter and in four with ordinary goiter. The findings on the whole confirm those reported by Goetsch (1918) in 195 cases of goiter, including fifty of the exophthalmic type, demonstrating the peculiar hypersusceptibility to suprarenal extract in clinical states of hyperthyroidism. This characteristic response to epinephrin and also the discovery of extreme functional activity of the thyroid cells, as indicated by the mitochondria contents, will aid in the differential diagnosis from other nervous disturbances, and also in estimation of the value of different modes of treatment. The surgeon also may be interested in the peculiar hypersensitiveness to epinephrin with hyperthyroidism, as affecting his routine use of epinephrin with the anesthetic at operations.

Lumbar Puncture in Treatment of Blindness from Wood Alcohol Poisoning.—Zethelius gives here a preliminary communication on the benefit from lumbar puncture as he witnessed it in three cases of blindness from methyl alcohol poisoning. Great improvement in vision followed the lumbar puncture at once and continued to progress, as the punctures were repeated, in one case, with vision up to 1 in about a month. There had been an interval of four days before any appreciable symptoms had developed, and then all the symptoms except the visual soon subsided. In the second case the punctures were begun the second day after ingestion of the liquor, with vision of 0.1/60 in the right eye and only perception in the left. The amaurosis persisted for twelve days but by the end of the second month vision had become 3/50 and 0.1. In the third patient, vision increased from amaurosis by the tenth day to 0.3/60 and 1.5/50 in about seven weeks. In these last two cases there was persisting atrophy of both papillas. The lumbar puncture was repeated three or four times in each case. The benefit from it, Zethelius says, surpassed that from any other known method of treatment. We know that alcohol or its derivatives pass into the cerebrospinal fluid; they have been found in it at necropsy in wood alcohol cases, and release of the toxic fluid is thus directly indicated, while reduction of intracranial pressure may lessen to some extent the chance for absorption by the nerve substance of the poison in the fluid.

Ugeskrift for Læger, Copenhagen

Feb. 26, 1920, **82**, No. 9

*Experimental Leukemia. V. Ellermann.—p. 279.
*Treatment of Uric Arthritis. L. Petersen.—p. 290.

Experimental Leukemia.—Ellermann describes further experiences with strain H of the virus of fowl leukemia cultivated through twelve generations.

Treatment of Gouty Arthritis.—Petersen gives potassium iodid and hexamethylenamin, determining the tolerance of the iodid by examining the urine for retention of iodin. This combined treatment has often given excellent results with pains in the joints, and tophi. At first the pains are increased, but by the end of the week improvement is evident, and in six or seven weeks the maximal effect is reached.